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Profits By Diversifying Products

Moderate Size Plant Anticipates Disadvantage of Single Line and Extends Activities by Developing New Devices—Production Carefully Planned

BY BURNHAM FINNEY*

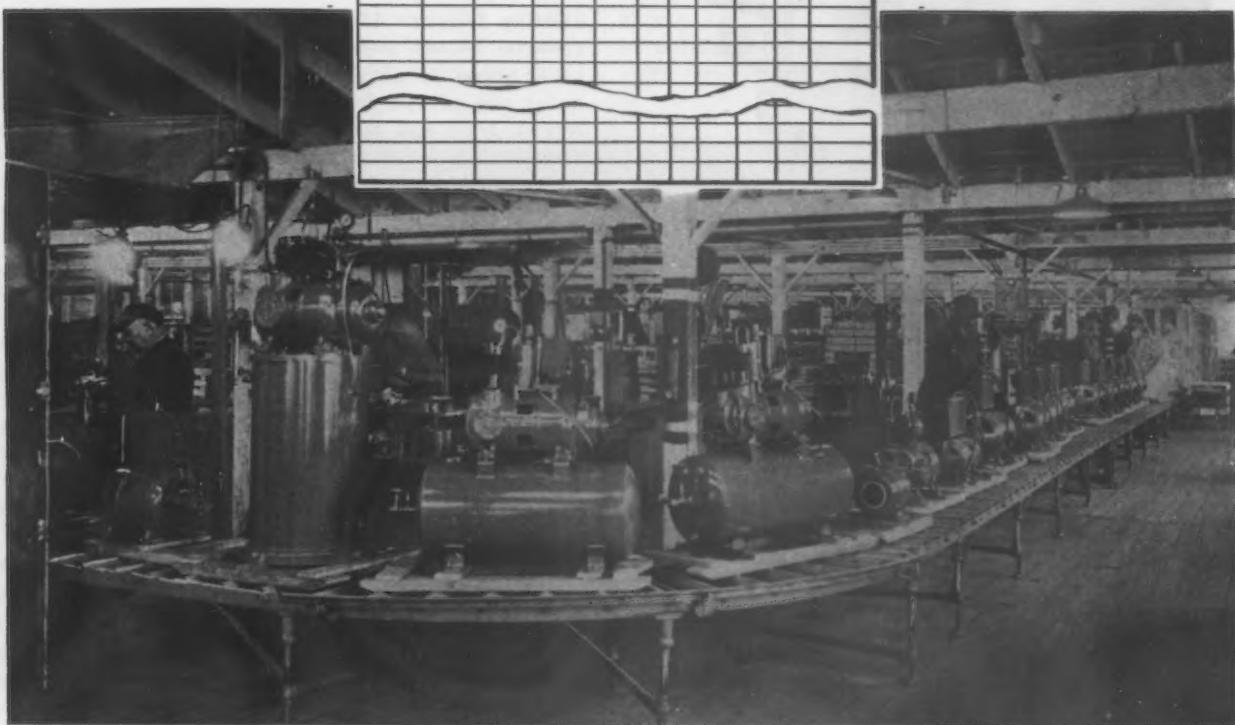
EXCESS producing capacity has been put forward in the past few years as one of the chief ills affecting many industries. Some manufacturers have sought to meet this situation by diversifying their lines, and an increasing number have successfully adapted their plants for the manufacture of a multiplicity of products.

An example of a metal working plant of moderate size which has diversified its products and thereby attained volume of output without sacrificing profits is that of the Hobart Brothers Co., Troy, Ohio. To facilitate conception of the company's policy, it may be well to consider its history.

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In the early days of the electrical industry, when the use of electricity for lighting was being introduced, C. C. Hobart, president of the company, saw the possibilities in electrically-driven equipment. In connection with his work in manufacturing and installing lighting plants, for instance, he saw the grocery clerk tiring himself grinding coffee by hand. An electric coffee mill was the result. After his business had grown substantially, Mr. Hobart sold his holdings and for a time left the electrical field.

Meanwhile his two sons became enthusiastic at the prospect offered by electrically-driven devices. Soon after his graduation from college, one



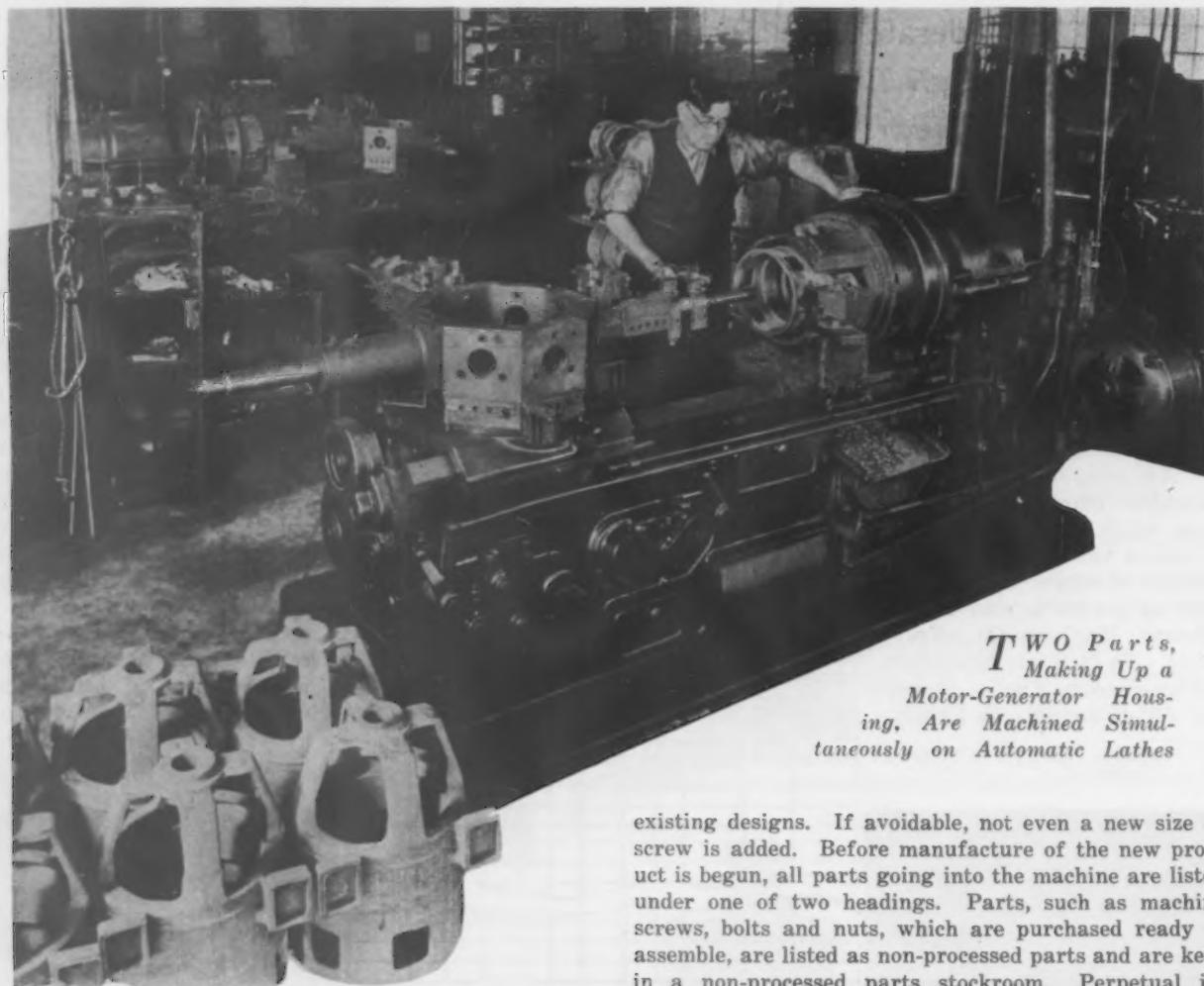
Material to Be Machined or Otherwise Processed Is Accompanied Through the Plant by the Card Shown. Roller Conveyors are extensively used. The view shows machines being conveyed from paint spray booths.

of the sons, Edward A. Hobart, opened an electric motor repair shop. One of his possessions was an electric automobile, and in order to charge the battery of the car he built a motor generator set to convert to direct current the alternating current provided by the municipality. With the generator working successfully, other owners of electric automobiles began to bring their cars to Mr. Hobart to have the batteries charged.

At that time the electric starter for gasoline automobiles was just coming on the market, and the owners of such cars with that device also wanted their starter batteries charged. Realizing the field that was opening up, Mr. Hobart, with his brother, William H. Hobart, began an advertising and sales campaign which

that the Hobart Brothers Co. today manufactures 30 items and sizes of equipment. The principal products are: Motor generator sets for battery charging, for motion picture show arc lights and for arc welding; air compressors for tire inflating, paint spraying and for industrial applications; battery testing equipment; electrically-driven grinders; automobile starting motor and generator testing equipment; and car washers.

Control of the material and parts required to make such a variety of products has presented many problems, and close cooperation between different departments has been essential. In designing a new product, the engineering department takes into consideration the items already manufactured by the company and makes as many parts as possible interchangeable with



Two parts, making up a Motor-Generator Housing, are machined simultaneously on automatic lathes

caused their motor-generator manufacturing business to grow rapidly.

Foresees Danger in Dependence on Single Product

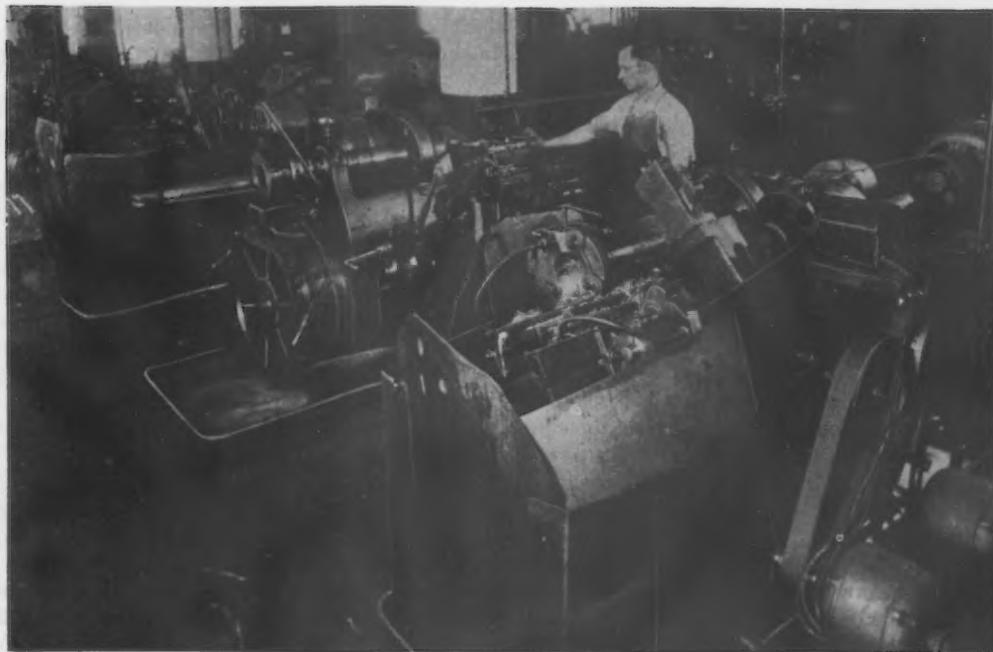
In 1916 E. A. Hobart saw danger ahead in being entirely dependent upon a single product, the use of which was limited and for which substitutes were appearing on the market. He was convinced that the automobile industry offered unusual possibilities and that the thing to do was to add another commodity which would be of service in the field in which the company had already become known. Accordingly, he began development of a small air compressor which, after four years of experimental work, was ready for the market. Being familiar with automobile construction, Mr. Hobart conceived the idea of utilizing the rear axle spiral bevel drive on an air compressor and put the idea into practice.

Having built up two different products, the company did not hesitate to add others as the needs of garages and automobile repair shops expanded. The result is

existing designs. If avoidable, not even a new size of screw is added. Before manufacture of the new product is begun, all parts going into the machine are listed under one of two headings. Parts, such as machine screws, bolts and nuts, which are purchased ready to assemble, are listed as non-processed parts and are kept in a non-processed parts stockroom. Perpetual inventory is kept of this stock by means of a visual index filing system. Parts on which machining or any other work is required before they are ready for assembly are classed as processed parts. This material is started through the necessary operations by the production department, a production order card accompanying it. This card, reproduced herewith, specifies the routing and lists all operations. Space is provided on the lower part of the card for entering the daily production records. Upon completion of machining or other operations, the parts are sent to finished stock storage bins along the assembly line, each part being stored adjacent to the point where it will be assembled.

With approximately 2500 different items of material going into products on which about 7000 operations are performed, accurate records are essential. All records are headed with the number of the drawing, the number being so devised that an employee who has been in the factory only a short time gets a clear conception of what a particular drawing number covers. To make this clear: Suppose *A* indicates a certain bore and size of housing, in this case 8-in., and *P* is the

MOTOR - Generator Shafts
Are Machined on Gridley Automatics. One end of the shaft is finished, ready for grinding, on the unit in the foreground, and the other end of the shaft is finished on the second machine



symbol for compressors. Therefore in seeing the symbol *AP8*, the workman knows that the subject is an 8-in. bore compressor part. The pattern number is the same as the drawing number, and all operations on the piece have the drawing number as a prefix. For example, *AP8-1* would be the first operation on piece *AP8*. With this simple system, it is possible for many employees to know the drawing numbers of a great many parts, and consequently the numbers of patterns, jigs and operations.

With a diversity of products the problem of material handling is less easily solved than in a plant engaged in mass production of a single commodity. Mechanical conveying has been worked out successfully, despite the fact that in planning for it there arose difficulties which ordinarily do not occur. In order to bring about economies by the use of conveying equipment, it was necessary to arrange departments so that consecutive operations would fall in logical order and material move along a straight line from one operation to the next. Where roller or belt conveyors could not be utilized to advantage, lift trucks and platforms were substituted. The company has

made a strict rule that nothing is to be piled on the floor, platforms or skids being used for the temporary storage of material in process. In this way material can be moved instantly.

Use of Modern Equipment an Established Policy

One of the major factors in maintaining a high standard of quality of product and in effecting manufacturing economies has been the installation of modern machine tools. Practically all machines are individually motor-driven and are specially equipped for certain work. The two parts that make up a motor-generator housing are machined simultaneously on automatic lathes, which, in addition to reducing the cost per piece, have permitted closer accuracy than previously. Air compressor crankcases are milled in one operation on an Ingersoll milling machine, equipped with three roughing cutters and two finishing cutters which work simultaneously. Similarly, five cutters are used in milling motor-generator housings in one operation. For making motor-generator shafts a number of Gridley automatics have been installed. One machine finishes one end of the shaft ready for grinding.

AIR Compressor Crankcases Are Milled in One Operation. The machine is equipped with three roughing and two finishing cutters. Similarly, five cutters are used in milling motor-generator housings



As soon as this operation is completed, the shaft is put in the second machine and the other end is finished.

Cooperation of Employees Fostered

While efficient control of production, installation of a simple system of keeping records, setting up of mechanical conveyance for transporting material and use of modern machine tools have contributed to the solution of the problems presented by the manufacture of a multiplicity of products, the most important factor has been the human element. To keep each employee interested in his work and to have him take pride in that portion of the product for which he is responsible has been the goal set by the company. To do this, different wage systems have been instituted in different departments. Varying conditions throughout the plant make undesirable a uniform wage system for all departments. Instead the management has tried to see that each man, judged by his natural ability, by his training and by his productive capacity, receives the highest pay to which he is entitled.

Foremen have been recognized as key men in maintaining contacts between management and employees. In every department hangs a sign giving the name of the department and the name of the foreman in charge. Beneath the sign is the slogan, "Quality—First and Always." The signs have a splendid psy-

chological effect in creating in the foreman a fine sense of responsibility and in making him properly feel that he is important in the eyes of the management.

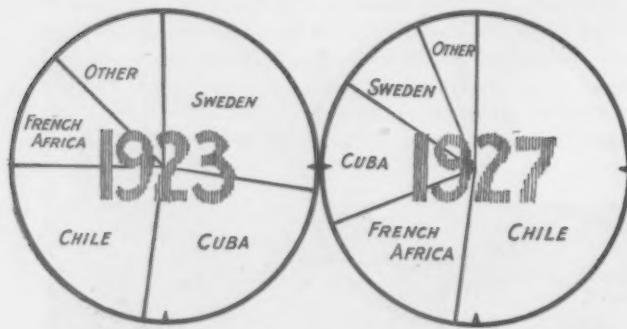
Foremen's meetings are held monthly. A few select employees other than foremen are invited to these meetings so that they may obtain first-hand knowledge of some of the problems confronting department heads. These conferences are conducted in the lunchroom of the plant and either a speaker is brought in or a round-table discussion is arranged. During the discussion each man has an opportunity of bringing before the group some of the difficulties he has encountered, and the discussions have been valuable not only in effecting cooperation but in bringing to each foreman the realization that his is not the only department, an idea which is likely to take root if such conferences are not held.

The experience of the Hobart company serves to show how a plant of moderate size, during a period of intense competition and of over-production in many industries, has been able not only to keep the position which it reached years ago, but also to extend its activities into new markets by intelligently planning its production program and by developing, within profitable bounds, new commodities the demand for which has been created by constantly changing conditions in industrial life.

IRON ORE IMPORTS GAIN

Changing Sources of Supply Notable in Last Few Years

IMPORTS of iron ore into the United States in 1927 are reported by the Department of Commerce at 2,620,717 gross tons. This represents an increase of about 2½ per cent over the 1926 total and is the largest incoming volume since 1923. With that exception, it is the largest total we have ever brought in. Imports in December, at 131,837 tons, were far below the figure



of a year earlier, and far below the November total. If the December incoming movement had been in accordance with immediately preceding months, the aggregate for the year would have come close to the 1923 record.

Chile has furnished more than half of the total iron ore imports each year for the last four years. This is in contrast with Chile's position in 1923, with less than one-fourth the total, and with a smaller tonnage than came from either Sweden or Cuba. This point is brought out clearly in the diagram, which shows the proportion of the iron ore imports from the four principal supplying countries in 1927 and in 1923. Sweden, which was first in 1923, has dropped to fourth position. Cuba, which was second in 1923, is now third. Chile, which was third in 1923, has advanced to first, and French Africa, which was fourth in 1923, is now second.

It will be noted from the diagram that the supplies coming from countries other than the four mentioned have dropped off markedly. This total of all other shipments was under 169,000 tons in 1927, against 345,000 tons four years earlier. Spain in 1923 furnished about 215,000 tons, and in 1925 and 1926 sent in more

than came from Sweden. Shipments from Spain have fallen to about one-eighth of the 1923 total, accounting for the major portion of the shrinkage of imports from the countries not individually shown in the diagram.

Sources of American Imports of Iron Ore

	(In Gross Tons)		12 Months Ended December	
	December	1926	1927	1926
Spain		1,196	27,165	83,608
Sweden	20,178	14,114	244,458	53,605
Canada	6,405	556	26,079	16,984
Cuba	29,500	50,000	392,113	539,000
Chile	61,500	111,000	1,369,200	1,364,400
French Africa		15,900	446,420	321,745
Other countries	14,254	12,269	115,282	176,099
Total	131,837	205,035	2,620,717	2,555,441
	Total	From Chile	From Cuba	From Sweden
1927	2,620,717	1,369,200	392,113	244,458
1926	2,555,441	1,364,400	539,000	53,605
1925	2,190,697	1,113,900	535,130	141,324
1924	2,047,055	1,144,775	285,288	310,436
1923	2,768,430	634,600	692,979	749,765
1922	1,135,156	.....	381,746	317,539
1921	315,768	.....	123,222	143,234

Prizes Given for Accident Prevention Work

Stanley & Patterson, Inc., 150 Varick Street, New York, manufacturer of electrical products, was the winner of the 1927 metal manufacturers' industrial accident prevention contest, conducted by the Merchants' Association of New York. At a meeting held on Feb. 7 the employees of the Stanley & Patterson organization were presented with \$100 in gold as a reward. The company employs 250 persons and operated its plant for 214,416 man-hours without accident.

Of the 50 companies participating in the contest, 22 operated during the four months ended Dec. 31 without a lost-time accident and were given certificates attesting their records. The American Safety Razor Co., employing 750, operated 577,368 man-hours with but two lost-time accidents and the Sperry Gyroscope Co., with 500 employees, had only two lost-time accidents with 326,561 man-hours of operation. These companies received honorable mention.

The M. A. Hanna Co., Cleveland, has been appointed exclusive sales agent of the Bulger Block Coal Co., with coal mines at Bulger, Pa.

Cutting Costs and Avoiding Accidents

Mechanical Charging System for Cupola Saves 66
Per Cent in Operating Charges—
Injury Hazard Reduced

BY G. F. TEGAN*

A MECHANICAL cupola charging system which has been in operation in the foundry of the Union Switch & Signal Co., Swissvale, Pa., since last October has reduced costs for charging from \$23.50 per day to \$8 per day. But it is not merely in this economy, one of several which have resulted from the change from manual to mechanical charging, that the management of the foundry finds satisfaction. The new system eliminated an accident hazard. Under the former method of charging the raw materials, the bins

effects a very substantial saving. The coke and stone gravitate into the bins and it is no longer necessary to have the coke delivered in box cars for protection against the weather, for which there is an extra charge of 50c. a ton or \$12.50 per car.

Another track on the other side of the storage house serves the pig iron and scrap bins. This track is served by an overhead electric traveling crane, used also by the forging shop of the company, lying parallel to the foundry building. It is equipped with a magnet



Coke and Limestone Are Delivered in Hopper Cars, Which Go Over the Trestle Under Which Are Located the Bins. Scrap is delivered on the opposite side

were located alongside a railroad spur track, directly under the loading platform. While no fatal accidents occurred, it happened fairly frequently that pig or scrap from a loaded charging box which had been improperly placed on the platform fell within a few feet of the men working in the bins. Introduction of the new system grew out of the desire of the management to wipe out that danger.

This system is unique in that the storage bins are built into instead of above the ground and, besides the mechanical charging, there is only one handling instead of two, as in most installations, of the raw materials. A spur track runs over a trestle, under which are the coke and limestone bins. Delivery of these materials in hopper cars obviates a handling and incidentally

hoist, and the pig iron and scrap are lifted from the cars and lowered into the bins. This is a much shorter lift and a simpler operation than would be the case with superposed bins.

Few would question the claim that it is actually a one-handling system. And it is a safe system, since by no conceivable way can any of the workmen be injured by falling loads. Proof of this is found in the fact that men who formerly either refused to work or worked unwillingly about the bins are really eager to work in the new bins, which are well removed from the radius of the charging bucket.

The system was the idea of the Union Switch & Signal Co. which made the drawings. The Webb Engineering Co., Oliver Building, Pittsburgh, was the contractor and made the detail drawings.

There are nine storage bins in all, five for pig iron

*THE IRON AGE, Pittsburgh.



To Permit Entry of the Large Charging Bucket, the Cupola Has Been Cut Away at the Charging Door. The hoist operator, by cable from the cage, releases the charge by opening the bottom of the bucket

and one for scrap on one side of the scale car pit, and two for coke and one for limestone on the other. The bins all have sloping bottoms, to give gravity movement of the materials to within easy reach of the loaders. The iron and scrap bins are open, while those in which the coke and stone are stored are gated to control the flow more easily, which is rapid on account of the use of heavy sheet steel as a covering for the bottoms. The floors of the iron and scrap bins get additional support, as well as resistance to the abrasion of the metals, from use of imbedded 20-lb. rails inverted. The structural steel and concrete bin house is of rugged construction. It is 90 ft. long and 45 ft. 3 in. wide, and is 21 ft. deep at the level of the scale car pit, which is approximately 6 ft. below the bottom of the bin floors. The iron and scrap bin doors, which serve also as a roof, are of heavy corrugated galvanized sheet steel.

The scale car, with automatic measuring devices, was furnished by the Atlas Mfg. Co., Cleveland. On it is placed a steel bucket capable of holding 4000 lb. of pig iron and scrap, 400 lb. of coke and 65 lb. of limestone. Nothing could be simpler than the making up of this charge, with scale bell to warn the operator when the correct amount of the several materials has been let down into the bucket. The charge made up, the scale car moves to an opening at the end of the bin building. Here the bucket is lifted by a 3-ton hoist, built by the Shepard Electric Crane & Hoist Co., Mon-tour Falls, N. Y., and conveyed by monorail to the cupola, where the hoist operator, without leaving the cage, unloads the charge.

As is true in all foundries where mechanical charging has replaced manual effort, the cupola in this plant has been cut away at the charging platform to permit the entry of the larger charge. It is interesting to note that the charging platform in this foundry, formerly littered with charging boxes and reserve supplies of

materials and equipment, now is as clear as the deck of a warship on inspection days. The change in the system has released considerable space for other uses. The new system is so thorough and dependable that it is not necessary to keep a supply of coke or metal at the charging opening of the cupola.

Definite Measure of the Savings

Based on 300 working days a year, the cost of handling materials to the cupola under the old system was \$23.52 a day (\$7,056 a year). Under the new method, it is \$8 per day or \$2,400 per year, which is an indicated annual saving, at 300 working days, of \$4,656 a year.

The foundry consumes 65 cars of coke a year. The old cost of unloading cars on the platform was \$35 a car or \$2,275 a year. It now costs only \$1.20 a car to perform the same operation, or \$78 a year, a saving under the new system of \$2,197 annually. There is in addition a saving of about 100 tons of coke a year, valued at approximately \$700, which was lost in handling. And in taking coke shipments in hopper cars instead of box cars there is the saving of 50c. a ton, which on 65 cars of 25 tons each amounts to \$812.50 a year.

Unloading three carloads of limestone, the usual yearly consumption of the company, formerly cost \$35 a car or \$105 a year. It is now being done for \$1.20 a car through the use of the trestle, a saving of \$102 a year. It was formerly necessary to maintain 48 boxes for handling metals, at \$18 each a year, or a total charge of \$864, while 25 boxes now suffice. At the same upkeep charge the annual cost is \$450, a saving of \$414. The foundry is charged for the use of the yard crane at \$8 an hour. It was formerly used 2 hr. daily; its use has been cut to 1 hr. daily, or a saving of \$2,400 a year.

A careful checkup of the results during the first three months of operation discloses that total costs for the year will run about \$6,000, under the new system, against almost \$16,000 under the old method. Besides this indicated saving there has been a more uniform cupola charge and consequently an improvement in the quality of the metal.



Charging Platform Now Serves as a Lane for Passage of the Hoist Conveying the Charge

Training and Paying Executives

Development of Administrators and Ways of Compensating Them Considered at American Management Association Meeting

WHILE scientific management has concerned itself exhaustively with the methods of training, supervising and compensating workmen, it has not often become introspective and stopped to consider the problem of maintaining and regulating the executive personnel. The development of executive talent, incentives for and compensation of executives, as well as methods for pensioning the men of administrative departments whose age has diminished their usefulness, were dealt with at the winter convention of the American Management Association, held at the Hotel Roosevelt, New York, Feb. 6 to 10. New points of view in the training of men on the job were also brought out, and emphasis was laid on telling how rather than what to do during the training periods.

Training Young Executives

Dependability, vigor, resourcefulness and personal leadership were suggested by Dr. W. W. Charters, professor of education, University of Chicago, as the qualities which should be developed in the training of young executives. During a well directed training period it is possible to determine whether any of these attributes are lacking in an individual. If the subject does not respond to special training along the line in which he is deficient, it is usually possible to shift him into another department of the company and into duties which are not essentially executive.

Dr. Charters' paper was based upon an investigation of the methods used for the development of executive talent by various members of the association. He found that a number of companies continue to place much stress on actual classroom instruction. In many cases this form of teaching is supplemented by considerable practical experience in various departments of the company. Other firms have derived splendid results without any formal classroom work, and develop their future administrators by a well planned building up of executive knowledge with consecutive training in the different departments. In such cases the young man is permitted to sit in on conferences devoted to policy problems and other administrative functions, and is allowed considerable personal contact with the manager in charge of the department in which he happens to be located. Special administrative problems are assigned, and careful study is made of solutions suggested by the junior. Criticism of such efforts is frequently warranted, but Dr. Charters pointed out that praise should be forthcoming when deserved, as the student has no other way of definitely knowing what progress he is making. This also leads to self confidence, which, if not developed to an extreme, is a very desirable quality in the young executive.

The speaker emphasized the fact that the advancement of an executive is always more likely if a properly trained assistant is available to step into the job. In spite of the fact that a number of men feel that training young executives is only training them out of their jobs, this seldom occurs in a progressive and expanding institution. Better positions nearly always await the man who is able to train others to attend to his own work properly.

Incentives for Executives

That incentive plans for executives may be used to advantage in industry was brought out by the experiences of a number of companies as outlined at two sessions of the meeting. Yet discussion indicated that the application of any sort of universal plan might easily nullify possible benefits.

Howard Coonley, president Walworth Co., Boston, in outlining the plan used by that organization, stated that

the company had made a success of its system largely through recognition of the fact that different classes of executives respond to different kinds of incentives. The better type of executive, Mr. Coonley pointed out, cannot be handed bonuses in the way they are given to shop workers. This is true partly because the product of the executive is somewhat intangible and cannot be set down immediately in dollars and cents. Yet a well regulated incentive plan for executives will have its effects on the earnings of a company, and the speaker brought out the fact that bonus methods used by the Walworth organization are expected to result in a material increase in profits within the next few years.

In a discussion of Mr. Coonley's paper, J. P. Jordan, industrial engineer, New York, opposed limiting incentives by set rules.

Pensions Are a Business Proposition

By pointing out that the payment of pensions to superannuated employees is a direct aid to management in keeping up efficiency, reducing accident hazards and lowering manufacturing costs, E. S. Cowdrick, industrial relations counsellor, New York, was able to place his plea for adequate pension plans on a practical business basis. "For this reason," he said, "it is probable that industrial pensions will be a permanent and growing form of business administration. At the same time it is likely that, with clear thinking on the subject, better administration and more adequate financing, pensions will become increasingly valuable to employers by raising efficiency and morale and by preventing the retention of superannuated workers on active payrolls."

Pension plans, the speaker stated, have developed rather recently in American industry. In surveying 248 plants he found that only five had had pension systems prior to 1900 and that 87 per cent of these companies had begun pension payments since 1910. This growth was due partly to the increase in life expectancy. The increase, however, has not been offset by a lengthening of the working period, which, on the contrary, has grown shorter. The spread of education and the decline in child labor are sending workers into industry at a much higher age than was true in the past, and there is less work for the laborer who has grown old or has even come to late middle life.

Mr. Cowdrick stated that there are several theories underlying pension payments, notably the deferred wage theory, the supposition that the pension is a charitable gratuity and the conception that it is a reward for long and faithful service. "According to the deferred wage theory," he said, "money expended for pensions comes out of funds available for the compensation of labor and is merely part of the wages which might have been paid to the worker during his productive years. If this theory were accepted there would arise at once a moral question as to the right of the employer to withhold any part of the wages due to employees and then to restore the money only to those who, by longevity and continuity of service, fulfill the pension requirements." He rejected this objection, however, because a company is not forced to pay the pensions in order to hold and secure a labor force.

The keen manager asks a stronger reason than charity for the payment of such pensions, and will not accept the theory that a reward must be paid for long service. If this were the only reason for pensions it would be cheaper to secure new employees at stated intervals. But upon realizing that paying pensions increases the morale of the worker and decreases labor turnover, thus

(Concluded on page 510)



Large Pipe for High Head Made by Arc Welding

Penstock for Japanese Hydroelectric Plant
Made of Bent Plates, Longitudinal
Joints Welded by Hand

BY T. UJIIYE*

SINCE the end of the great war, striking progress has been made in Japan in the scientific study of electric arc welding as well as in practical applications. Its utilization is becoming more popular year by year.

Modern, highly scientific welding is exclusively employed in the construction of important strength members of pressure vessels at the three dockyards of Mitsubishi Shipbuilding Co., Ltd., located at Kobe, Nagasaki and Hikoshima.

One of the earliest applications of welding on a large scale was the construction of a 1942-ft. penstock at our Kobe works for the Azumi Electric Power Co., Ltd. This penstock was built in 1924 for their Nakafusa No. 4 power station in Nagano Prefecture; it was the first penstock built by means of electric arc welding in Japan, and its successful operation proves the soundness of the design and manufacturing methods.

The dimensions are as follows: Total length of the penstock, 1942 ft.; upper riveted portion, 796 ft. long; lower welded portion, 1146 ft. long; maximum statical head, 1031 ft. The welded portion is in two sizes with a reducer at the middle part of the line, the upper section being 625 ft. in length by 42 in. in diameter includes pipes numbers 1 to 31, and the lower highest pressure section 521 ft. in length by 39 in. in diameter.

Individual sections of pipe were made 20 ft. long; plate thicknesses ranged from $\frac{1}{2}$ in. to $\frac{3}{8}$ in., as shown in the accompanying table.

Manufacturing Procedure

Flat steel plates were cut to shape by guillotine shear, and the edges were milled to the correct bevel as shown in the figures. Then the plate was bent to the required semi-circle by means of a mast roller.

*Welding engineer Mitsubishi Shipbuilding Co., Ltd., Kobe, Japan.

Two plates formed the pipe; with a temporary band outside and an inner core at each end, it was then welded on specially designed roller saddles. Each piece has two longitudinal welds, diametrically opposite.

After having properly prepared the edges of the plate and assembled the joint, a light tack weld or initial layer weld was made at 8-in. intervals along the outside of both seams. The welder then made a complete weld between the first two tacks. He then omitted three spaces and welded between the fifth and sixth tacks, and so on, until the end of the seam was reached. This process was again repeated by starting between second and third tacks, skipping three, and so on, until the whole seam was welded. Finally, a finish or second layer weld was made on the initial light tack welds along the entire line to complete the work.

Cast steel flanges, approximately 4 in. x $3\frac{1}{2}$ in. x $1\frac{1}{4}$ in. were then attached at each end by edge welds, as shown in Fig. 1. The routine of the work was about the same as just described for the longitudinal seams.

The anchor rings shown in Fig. 2 were bent from a straight bar, 0.66 in. x 4 in., and the ring was butt welded at the closure. Each was attached by a series of 3-in. corner welds alternating with 5-in. open spaces, the series on either side being staggered in position.

Pipe No. 53 has a T-branch welded on to lead to one turbine, while pipe No. 54, in addition to a similar turbine outlet, is closed by a domed end.

Each completed pipe was subjected to a hydrostatic pressure test ranging from 368 to 670 lb. per square inch depending on the thickness of the pipe wall, as shown in the table. The result was satisfactory; no welded places failed.

Electric Arc-Welded Steel Pipe for Azumi Electric Power Co., Ltd.

Pipe Number	Thickness, In.	Length, Ft.	Kind of Pipe	Max. Statical Head, Ft.	Max. Statical Pres- sure, Lb. per Sq. In.	Statical Pres- sure, Lb. per Sq. In.	Test Pres- sure, Lb. per Sq. In.
1 to 6	$\frac{1}{2}$	20	Straight	565	245	368	
7	$\frac{1}{2}$	12	Straight	565	245	368	
8	$\frac{1}{2}$	19	Bend	654	283	425	
9	$\frac{1}{2}$	32	Expansion	654	283	425	
10 to 15	$\frac{1}{2}$	20	Straight	654	283	425	
16 to 22	$\frac{1}{2}$	20	Straight	744	322	483	
23	$\frac{1}{2}$	32	Expansion	826	358	537	
24 to 30	$\frac{1}{2}$	20	Straight	826	358	537	
31	$\frac{1}{2}$	20	Straight	826	358	537	
32	$\frac{1}{2}$	19	Reducing	826	358	537	
33	$\frac{1}{2}$	40	Expansion	918	398	597	
34 to 37	$\frac{1}{2}$	20	Straight	918	398	597	
38 to 43	$\frac{1}{2}$	20	Straight	1000	433	650	
44	$\frac{1}{2}$	20	Straight	1031	447	670	
45	$\frac{1}{2}$	19	Bend	1031	447	670	
46	$\frac{1}{2}$	40	Expansion	1031	447	670	
47 to 50	$\frac{1}{2}$	20	Straight	1031	447	670	
51A	$\frac{1}{2}$	18	Bend	1031	447	670	
51B	$\frac{1}{2}$	16	Bend	1031	447	670	
52	$\frac{1}{2}$	5	Straight	1031	447	670	
53	$\frac{1}{2}$	20	Straight	1031	447	670	
54	$\frac{1}{2}$	18	Straight	1031	447	670	

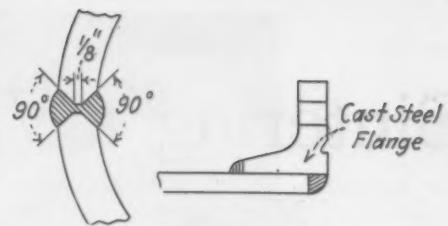
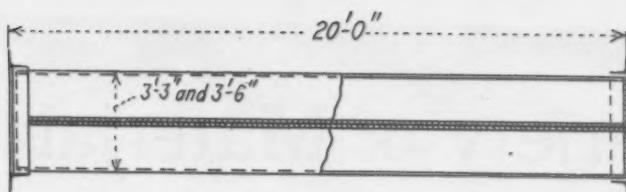


Fig. 1—Details of Straight Pipe. Each length has two longitudinal seams, double vee

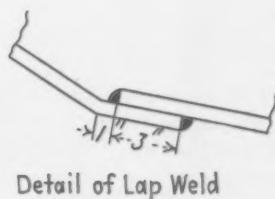
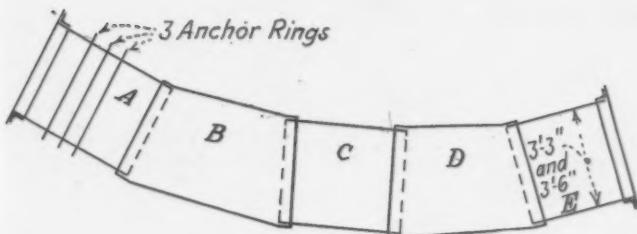
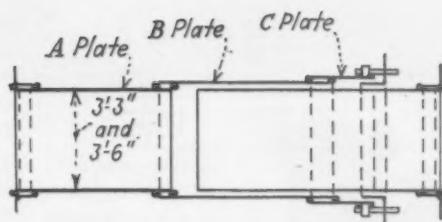


Fig. 2—Bends Are Made by Welding Straight Nipples Inside Flanged Connectors

Fig. 3—General Assembly and Details of Expansion Joint



Field joints between pipe sections were made by a series of 24 to 32 bolts, in size up to $1\frac{1}{8}$ in. in diameter, depending upon the stress to be carried. All tests, including proof test on the completed line, were completed to the entire satisfaction of the customer; the work also passed the severe survey of the Japanese Communications Department.

Advantages of Welded Construction Listed

Experiences with this penstock indicate the following advantages of this type of construction: First, tight joints, metal solid against metal, can be obtained without punching a single hole in the pipe wall; second, the weight of the pipe can be considerably reduced below a riveted design, and the expense of punching and caulking is also eliminated; third, the diameter of the entire line was reduced by about $1\frac{1}{2}$ in., because the internal friction caused by rivet heads is eliminated; fourth, continual inspection and caulking of leaks has been dispensed with; fifth, the appearance of the welded line is much better than a riveted one and lagging can be applied in a more economical way; sixth, after installing the penstock on the site, and passing water into it, no trouble or no stoppage has occurred; and seventh, in operation, the water is passed in a more satisfactory manner than ever experienced with riveted pipes.

All those who have been connected with this power project, or who have inspected this penstock, are of the opinion that it offers a positive demonstration of the advantage of electric arc welding in securing rigidity of pipe, low frictional resistance, less weight for transportation and installation, greater capacity for the turbines, smoother interior and exterior surfaces and freedom from corrosive tendencies. The Mitsubishi Shipbuilding Co. is confident that the process applied under strict supervision of technical engineers will give great economies and satisfaction.

Welding of Gun Metal

Hitherto it has been impossible to weld gun metal bronzes (90 per cent copper, 10 per cent tin) because the microscopic crystals of delta constituent existing in such castings cooled at a moderate rate will melt and boil out before the alpha solid solution, which forms the bulk of the alloy, reaches its melting point. The result is a concentration of tin next to the weld line, inducing brittleness, and a spongy zone just below, through which cavities rupture occurs at relatively low loads.

S. W. Miller, welding engineer, Union Carbide & Carbon Research Laboratories, in a paper to be read before the Montreal meeting of the American Society for Steel Treating, notes that this trouble can be avoided by heating the casting before welding to 1000 deg. Fahr., when the delta constituent changes to a higher melting, tough beta solid solution. After welding the rate of cooling should be about that of the original casting.



Fig. 4—Pipe Sections in Testing Yard

Sintering a Variety of Materials

Magnetic Concentrates and Iron-Bearing Ores Handled by Continuous Dwight & Lloyd Process

BY EDWARD J. TOURNIER*

CONTINUOUS sintering of ferrous materials was discussed, in many of its general aspects, at page 191 of *THE IRON AGE* for Jan. 19. The present article carries the subject forward into consideration of the possibilities of the process for two particular types of raw materials—magnetic concentrates and iron-bearing ores. The series will be concluded with a third article, to be published at an early date. A previous series of three articles, by the same author, covered intermittent sintering. They were published in *THE IRON AGE* of March 17, April 21 and July 14, 1927.

Sintering Magnetic Concentrates

For a number of reasons the sintering plant of the Chateaugay Ore & Iron Co. is of considerable interest: First, it has in operation the largest continuous process machine ever built; second, it treats magnetic concentrates. The ore, which contains about 62½ per cent iron, is conveyed from a concentrator plant to a storage bin at the top of the sintering plant. Adjacent to the ore bin is a similar bin for anthracite culm, which is used for ignition. Both bins have American Ore Reclamation Co. revolving table feeders which discharge materials directly into a pug-mill, where they are mixed and moistened with water. The mixture then goes by belt conveyor to the swinging spout of the 72-in. x 64-ft. sintering machine. Sintering fuel is approximately 6½ per cent.

The sintering machine has a suction zone 6 ft. wide and 63 ft. 4 in. long, and has 84 pallets mounted on Timken roller bearing wheels. Each pallet is fitted with six grate bars. The driving mechanism consists of two sets of gears and an inclosed reducer. This arrangement brings the gears outside the machine frame, making them more accessible. It also takes them out

of the path of sinter dust from the pallets. The machine has a capacity of 50 tons of sinter per hour.

Oil Is Used for Ignition

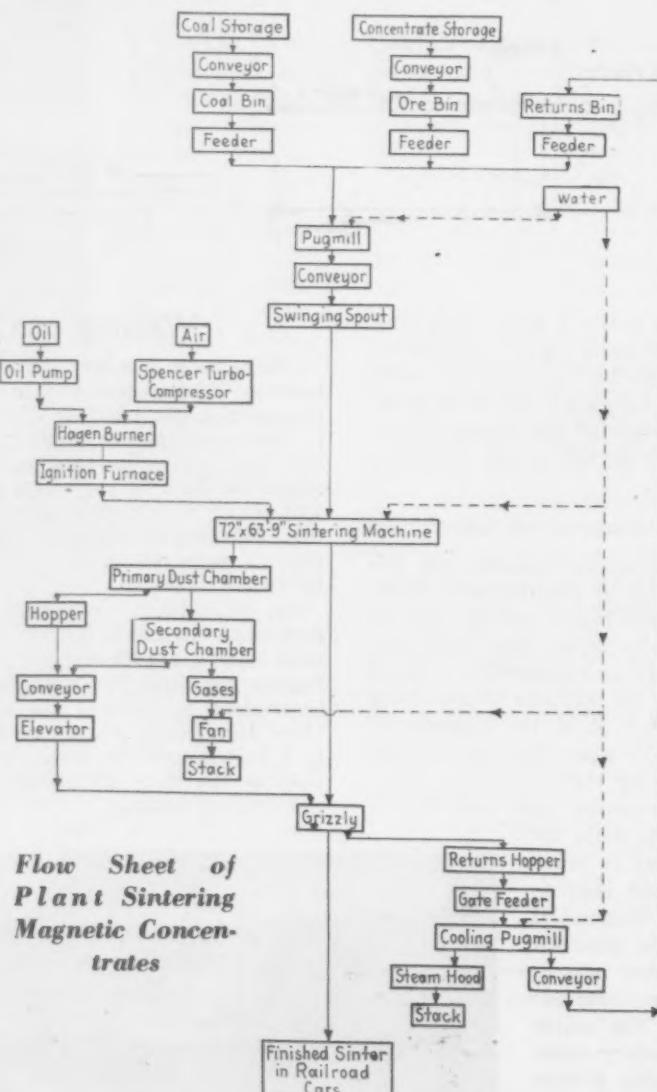
After the material has been spread on the grates by the swinging spout it passes under the ignition furnace, which is fired by oil. About 0.40 gal. of oil per ton of sinter is used. Air for combustion is furnished by a Spencer turbo-compressor. Air and oil, mixed in a Hagen burner at the side of the furnace, pass through a pre-heating coil directly into the combustion chamber of the furnace.

Combustion gases pass through cast iron tubes to a preliminary dust-settling chamber, where separation of the coarse particles is effected. The preliminary separator discharges into a hopper having double bell valves at the bottom. These valves are operated intermittently, the coarse dust being thus fed on to a belt conveyor, which takes it to a small belt and bucket elevator. The latter discharges the dust over a stationary bar screen on the discharge end of the sintering machine. The larger pieces are delivered to a railroad car and the fines drop into the return hopper.

The gases then pass into a centrifugal separator where the fine particles of dust are eliminated. The dust separator is connected to a center-plate fan, 100 in. in diameter, having a capacity of 60,000 cu. ft. of air a min. at 720 r.p.m. It is direct-connected to a 350-hp., 2300-volt General Electric synchronous motor.

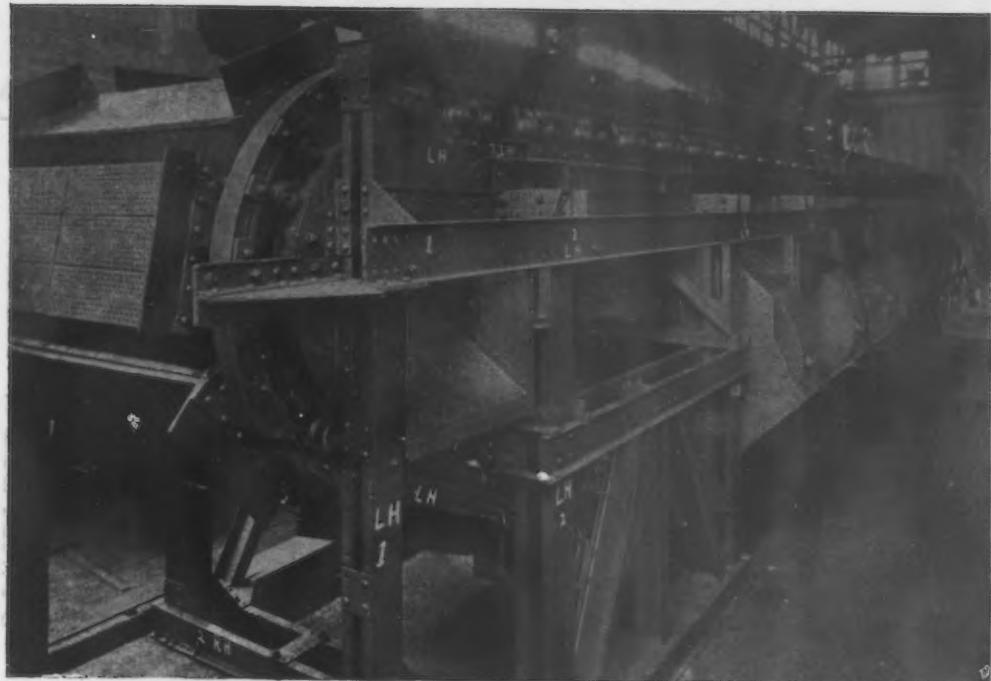
Sintering Iron-Bearing Ores

At blast furnaces where sintering plants are operated, the depletion of the flue-dust stock piles creates a condition which necessitates the employment of other materials that can be treated profitably. Such a con-



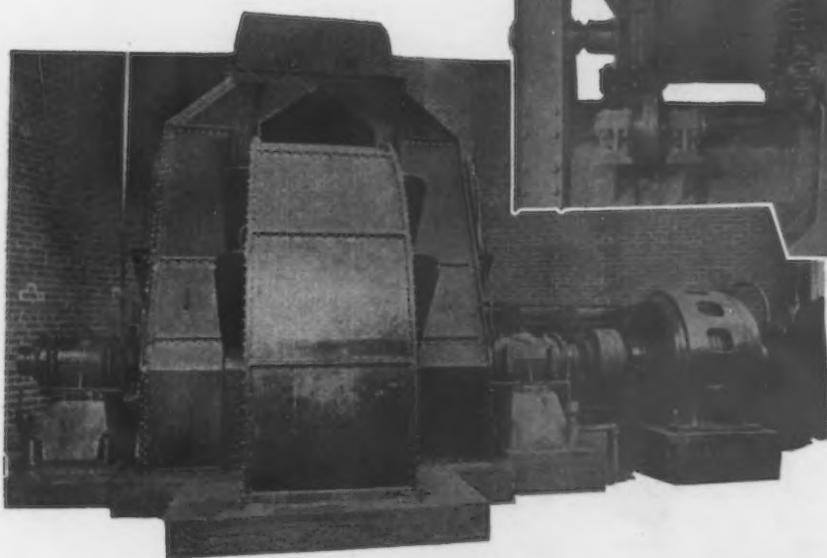
*Mechanical engineer, 110 Clinton Avenue, Clifton, N. J.

(Concluded on page 510)



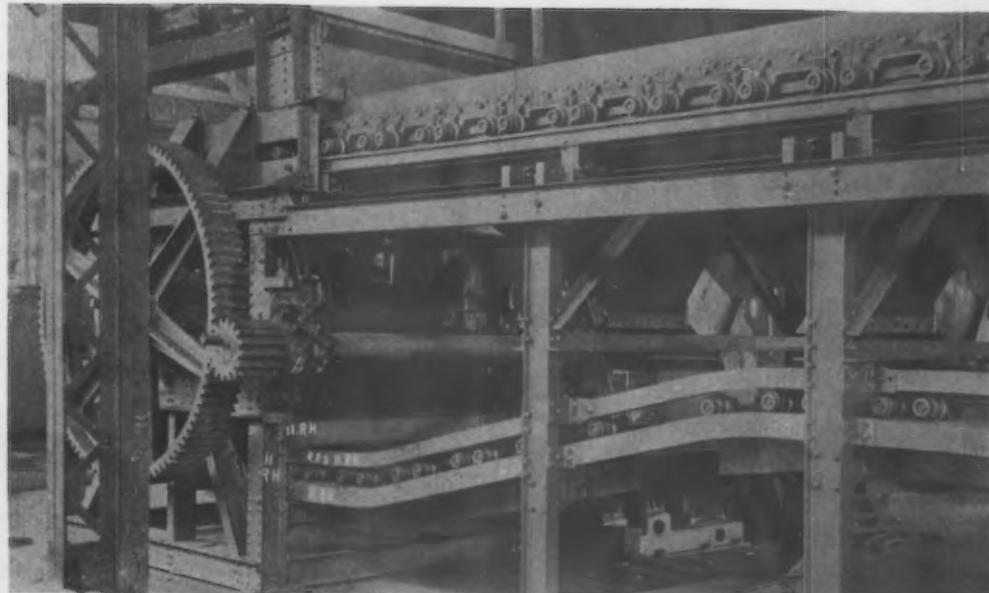
A NOTICE-ABLE Point About the Discharge End of the Sintering Machine Is the Absence of the Gap Between Pallets Existing on Older Designs. Both the top and the return sides are actuated by the sprockets at the drive end (shown at bottom of page)

DOUBLE-INLET 100-in. Center Plate Fan (Below) Is 23 Ft. from the Left-Hand Fan Bearing to End of Motor. It is 12 ft. 6 in. high



TYPE of Pug Mill or Mixer (Above) Used for Materials Which Tend to Be Sticky. It is generally used in treating concentrates

DRIVE End (Right) of a 72-in. x 63-ft. 4-in. Sintering Machine. Note the absence of gear trains between top and bottom strands of pallets. The distance from floor to top of pallets is about 11 ft. 9 in.



Non-Deforming Steels Require Care

Heat Treatment to Prevent Cracking, Warping, Soft or Brittle Skin, and to Get Desired Hardness and Exact Size

BY W. PAUL EDDY, JR.*

HERE are two important classes of so-called non-shrinking oil-hardening tool steels. The first and older type contains usually 0.85 to 1 per cent carbon, and 1.50 to 1.75 per cent manganese; some brands also have 0.15 to 0.25 per cent vanadium. The second type is a later development of the simple manganese oil-hardening steel. It contains the same amount of

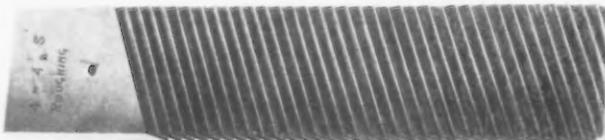


Fig. 1. Hand Broach Made of Straight Manganese Steel, with Vanadium. Hardened in salt bath at 1500 deg. Fahr. Ground on cutting edges only

carbon but about one-half per cent less of manganese than the older steel, and has approximately 0.5 per cent each of chromium and tungsten; some brands of this type also contain a small amount of vanadium. The phosphorus, sulphur and silicon in both types are kept as low as is practicable. Both steels are made in either electric or crucible furnaces, principally in the former.

It appears that the chrome-tungsten type is very slowly displacing the straight manganese. The newer alloy seems to have as small a volume change in hardening as has the older, and in addition to have somewhat better cutting qualities. It is true, nevertheless, that in a great many applications the two steels may be used interchangeably.

They are much used for gages—in plug gages they are generally conceded best among the tool steels so far as wear resistance is concerned. They are widely used for stamping and blanking dies, thread-rolling dies, hobs, taps and broaches. It perhaps goes without saying that many of the applications are for master tools or dies which, owing to complicated design or to lack of special equipment, are inconvenient or impossible to grind after hardening. Yet a successful product cannot be produced consistently without very careful handling and knowledge of the peculiarities of such steels.

Procedure to Avoid Cracking

Both these steels, and especially the early manganese type, are far from immune to cracking. To overcome this hazard, we apply the same principles used for other steels: (a) re-annealing, before hardening, any tools of very complicated design or on which much work has been done; (b) careful design, to eliminate so far as possible immediately adjoining thick and thin sections and sharp corners and angles; (c) careful inspection of the steel for defects; (d) slow, even heating of the tools, using preheats whenever possible; (e) careful quenching; (f) tempering soon after quenching; (g) annealing, whenever rehardening is necessary.

Of course, there is no steel which is absolutely non-deforming in heat treatment. The difference in volume

change between these steels and most other tool steels is one of degree only. Non-deforming steels have very low volume changes after correct heat treatment.

Although these steels scale somewhat less than plain carbon steels, they show a marked tendency toward forming a soft skin during hardening. With ordinary methods it will often be found that a file easily digs into the surfaces to depths which may vary from 0.001 in. to 0.005 in., depending upon the size of the tool, the method used and the care exercised. It must be remembered that the slightest skin softness may be fatal to precision tools which probably are not to be ground.

Non-deforming steels transform with comparative sluggishness when passing through the critical range during heating. They require considerably longer times of heating than do plain carbon steels. This means that the opportunity to decarburize or to scale is increased. It is sometimes found advisable to raise the

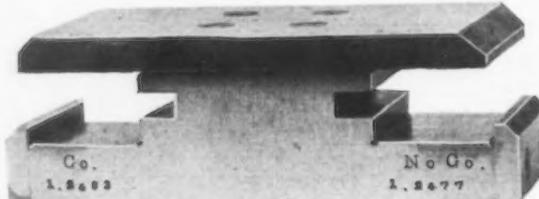


Fig. 2. Gage, Ground on All Working Surfaces. Made of same steel and hardened in same way as broach shown in Fig. 1

hardening temperature in order to reduce the time of heating.

The real problem is to produce hard surfaces with as little distortion as possible. Since it is not to be expected that many heat-treating departments will have facilities for all methods of hardening, the results to be expected in the use of several methods will be discussed.

Open Fire and Muffle Liable to Produce Soft Skin

The open fire method, using either a gas-fired or oil-fired oven furnace, will produce fairly good results in the hands of an expert treater. Possibly the majority of tools, especially the larger ones, made of oil-hardening steels are hardened in this way. It is probable that the chemical compositions of these steels were developed largely by experimentation in this type of furnace. The rate of heating therein is about correct to produce minimum distortion of the hardened and drawn tools. With the class of tools which we are considering, however, it is imperative, as has been said before, that scaling or decarburizing be practically nil; therefore success depends upon the expertness of the hardener.

Smaller tools may be hardened with fair success by using a muffle, such as suspending the pieces by hooks or wires in an empty crucible in a pot-type furnace. An alloy or even pressed steel pot may be used, although the life of the latter is comparatively short. This method, giving about the same rate of heating as the open fire, will cause but little distortion, but a good sur-

*Metallurgist Geometric Tool Co., New Haven, Conn.

face is at least as difficult to retain as in the semi-muffle oven furnace, and the same reservations about skill of the workman apply. For both these methods the hardening temperatures recommended by the steel manufacturers, usually between 1425 and 1475 deg. Fahr., are suitable.

Pack Hardening Requires Slightly Higher Quench

Tools such as taps and plug gages may be packed in charcoal (some prefer a mixture of three parts charcoal and one part carburizing compound) in a steel pot heated in a cylindrical pot furnace. In this practice it is advisable to heat not more than two or three tools at a time; they should be of approximately the same size, and should be arranged, with the thermocouple, at the points of an equilateral triangle or of a square, with all objects equidistant from the walls of the pot and as near the center of the pot as is practicable. The rate of heating should not be rapid, else the tools will heat unevenly. A more satisfactory method of packing, especially when a variety of shapes must be hardened, is to use ordinary carburizing boxes in an oven furnace—automatic temperature control of the furnace is very desirable—using charcoal or the above-mentioned mixture. Slightly higher temperatures, namely, 1450 to 1500 deg. Fahr., should be used with either pack method.

These methods are entirely satisfactory at these temperatures for giving a good surface. From the standpoint of distortion, however, they are not very good, except for tools whose three dimensions are about equal. Tools such as taps, owing to the slower rates of heating and longer time of holding at heat, diminish in length and increase slightly in diameter. This change can be modified by varying the hardening and drawing temperatures, but this produces undesirable metallurgical structures. Although steels containing vanadium may be able to withstand some variation in hardening temperature, such changes should be made with the utmost caution. Furthermore, even charcoal carburizes slightly at higher temperatures than 1500 deg. Fahr., often resulting in the formation of brittle surfaces.

A tap one-half to one inch in diameter, for example, may contract 0.0015 in. to 0.002 in. per inch of length

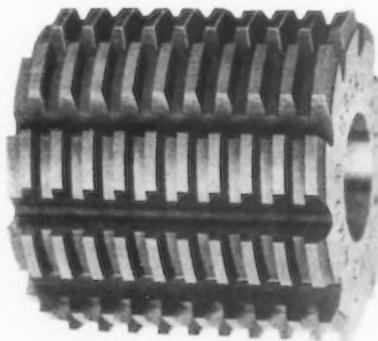


Fig. 3. Hob Mill Which Lengthened 0.0005 In. per Inch After Heat Treatment

when pack-hardened at 1475 deg. Fahr. If the temperature be raised to 1575 deg., the shortening will be reduced to about 0.0005 in. per inch, on an average. Further raising of the hardening temperature produces little or no change in the contraction. It may be said here that temperatures of 1450 deg. and 1550 deg. Fahr. in the open fire or muffle method would usually produce expansions in length of such taps of about 0.001 in. and 0.003 in. per inch, respectively, with no decrease in diameter.

Cyanide Baths May Produce Brittle Surfaces

One inevitably wonders if a bath method of hardening will prove satisfactory. A lead bath, if kept free from impurities, may give good results with very small tools, although it is not, in the writer's opinion, the

most desirable for larger masses of oil-hardening steels, on account of its very rapid heating rate. Temperatures of around 1475 to 1500 deg. Fahr. should be used with a lead bath, even when hardening small pieces. Change of dimensions after lead hardening at the above range of temperatures are usually very small.

A commercial case-hardening bath using calcium cyanamid as the active agent produces good results on varied sizes of tools at about 1475 deg. Fahr., so far as distortion is concerned; the surfaces of the tools are not softer than the interiors, but if anything a trifle harder owing to absorption of nitrogen. However, the increased brittleness of the edges of a cutting tool is unquestionably undesirable. Attempts have also been made to use mixtures of commercial heat-treating salts and sodium cyanide; such mixtures have about the same characteristics as the cyanamid bath; the brittle



Fig. 4. Chasing Tap Which Lengthened 0.001 In. per Inch After Heat Treatment

surfaces in the hardened tools are usually even more pronounced; furthermore, it will be found very difficult to maintain a constant percentage of cyanide, and the limits for successful operations are narrow indeed.

Claims for Salt Mixtures Exaggerated

There are several salt mixtures on the market which are claimed to melt into baths that are perfectly inert to all steels. I have not worked with all of these baths; but upon considering only those with which I have had experience, it is my opinion that many of the claims are exaggerated. Some baths do not retain their property of neutrality for any great length of time; others never had it, at least for oil-hardening steels. Some baths require the use of rectifiers, purifiers or inhibitors, which, however, are usually only partially efficacious. These statements do not apply, of course, to all commercial salts; some apparently do what is claimed for them. All of the six or eight baths which I have tried for carbon steel hardening will, when properly used, practically eliminate scaling. The temperatures necessary for hardening tools of non-deforming steels in salt baths, to obtain the desired change in dimensions, are between 1450 and 1500 deg. Fahr. Some operators believe that a better surface can be assured by raising the temperature slightly and shortening the time of heating.

Lest the words "desired change in dimension" in the above paragraph seem foolish, the reader should remember that all tools should be tempered, and that changes of dimension may take place during the tempering operation as well as the hardening. Whatever the method of hardening, a contraction in length occurs during tempering at low temperatures. This contraction increases in amount with rising temperature until about 400 deg. Fahr. is reached, above which the rate of change decreases. Most tools of oil-hardening steels, especially cutting tools and gages, are tempered at from 275 to 375 deg. Fahr. As an example, if the hardening temperatures suggested above for salt baths and a draw of 275 or 300 deg. Fahr., for 30 to 60 min. are used, almost no dimensional change may be expected. But if, for instance, a slight expansion is desired, say 0.0005 in. per inch of length of a thread gage or tap, with the same hardness as before, the hardening temperature may be raised about 25 deg. Fahr. with reasonable hope of success. It is entirely possible to work out a schedule of temperatures and times for both hardening and tempering for the various sizes and shapes of tools treated, which, if careful control be exercised, will be surprisingly consistent in the results produced.

A final word of caution is advisable in regard to

quenching: A comparatively gentle quench is sufficient to harden these steels, provided there is no surface change in carbon content during heating. A violent, swishing quench increases distortion and warping.

Recommended Heat Treatments

Fig. 3 represents a hob mill 2½ in. in diameter made of the later type of oil-hardening steel, containing manganese, chromium, tungsten and vanadium. This mill was not ground on the threads, but merely on the cutting edges, on the ends and the inside of the bore. This tool was packed in charcoal in an alloy carburizing box and heated to 1475 deg. Fahr. in an electric oven furnace equipped with automatic temperature control. It was withdrawn from the box by means of a

wire, which had previously been attached, and quenched in oil with a slow, regular up-and-down motion parallel to the axis of the tool. It was drawn at 300 deg. Fahr. for 30 min. in an oil tempering furnace. This hob lengthened 0.0005 in. per inch.

Fig. 4 shows a chasing tap made of the same type of steel as above. This tool is a ¾ in. diameter, 12-pitch, Whitworth thread tap and was ground only on the cutting edges after hardening. It was pre-heated to about 450 deg. Fahr. and suspended vertically by a wire in a salt bath at 1525 deg. Fahr. and heated for 12 min. It was quenched in exactly the same way as was the hob mill and was drawn at 275 deg. Fahr. for 30 min. This tap expanded in length 0.001 in. per inch, which was desired.

Mining Engineers Prepare for February Meeting

Papers on the Open-Hearth, Blast Furnace and Special Steels—

Fine Program for Institute of Metals

PAPERS on iron and steel will be much to the fore at the annual meeting of the American Institute of Mining and Metallurgical Engineers, Feb. 20 to 23, at the Engineers' Societies Building, 29 West Thirty-ninth Street, New York. An excellent program has been arranged.

The first session is scheduled for Monday morning, Feb. 20, at which Prof. William Campbell, Columbia University, will preside. The session will be devoted to alloys. "Critical Points in Chromium-Alloys" will be discussed by A. B. Kinzel, and he will include a description of a new type of furnace which may find a variety of applications in the future. Hugh O'Neill will present a paper on "Effect of Annealing on Cold-Worked Single Crystals of Silicon-Ferrite," and M. G. Corson will discuss "The Constitution of the Iron-Silicon Alloys," while C. R. Wohrman will present a paper on "The Heterogeneity of Iron-Manganese Alloys."

On the afternoon of the same day a session on special steels is scheduled and will be presided over by Dr. John A. Mathews. Robert Job will discuss "Types of Steel Used by Railroads, Past and Present," and C. W. Gennet, Jr., will present a paper on "The Manufacture of Some Foreign Rails." "Aircraft Steel" is the subject of a paper by E. A. Richardson, and Lloyd Jones, of the E. W. Bliss Co., Brooklyn, will discuss "Continuous Rolling of Sheets."

Sessions on Open-Hearth and Blast Furnace

A session devoted to the open-hearth furnace is scheduled for Tuesday afternoon, Feb. 21, L. F. Reinartz, chairman. "A One-Ton Acid Open-Hearth Furnace and Some Experimental Results" will be reported on by C. E. Meissner. This furnace was constructed at the Chrome Steel Works, Chrome, N. J. A. L. Feild will discuss "Rate of Carbon Elimination and Degree of Oxidation in Acid Open-Hearth Practice." The results of the study of the effect of temperature on the solubility of oxygen in iron will be presented by Dr. C. H. Herty, Jr., and J. M. Gaines, Jr. Prof. Enrique Touceda will discuss "Bailey Furnaces for Synthetic Pig Iron," and T. C. Bailey has taken as his subject "Electrically Heated Soaking Pits."

Wednesday morning, Feb. 22, will be devoted to the blast furnace, with Ralph H. Sweetser, American Rolling Mill Co., presiding. J. P. Dovel will describe what he has done to make the blast furnace a permanent structure instead of one that has to be periodically rebuilt at considerable cost in his paper, "Improvements in Blast Furnace Construction." W. R. Phibbs will describe some interesting special features in the operation of the blast furnace of the Columbia Steel Corporation at Ironton, Utah. "Gas Washing" is the title of a paper by A. J. Boynton, which he will supplement with observations based on his recent trip

to Europe. "The Use of High-Alumina Slag in the Blast Furnace" will be discussed by T. L. Joseph and two associates. J. R. Campbell will give results on the cleaning of bituminous coal to reduce its ash content.

On Wednesday afternoon there will be a joint round-table conference of members of the iron and steel committee of the A. I. M. and M. E., and the American Foundrymen's Association, on the subject, "Blast Furnace Operations and the Character of Pig Iron and Castings." This will supplement the one held a year ago. Ralph H. Sweetser will be the chairman.

Howe Memorial Lecture

The annual Howe memorial lecture will be presented at 4 p. m., Monday, Feb. 20, by Henry D. Hibbard, consulting metallurgist, Plainfield, N. J., who will take as his subject "The Significance of the Simple Steel Analysis."

The annual banquet will be held Tuesday night at the Waldorf-Astoria Hotel, at which the following presentation of awards will be the feature: The Hunt gold medal to Dr. John A. Mathews, the Hunt prize to Dr. C. H. Herty, Jr., the J. E. Johnson, Jr., award to P. H. Royster, and the Saunders gold medal for achievement in mining to Herbert Hoover, Secretary of Commerce, and past-president of the Institute.

Varied Program of Institute of Metals

Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers will hold several sessions, as is the custom, with the main society during the week of Feb. 20. The meetings will be held at 29 West Thirty-ninth Street, New York.

Tuesday, Feb. 21. 2 p. m. On Lead; R. S. Dean, chairman.

Wednesday, Feb. 22. 9.30 a. m. On Metallography; Zay Jeffries, chairman.

9.30 a. m. On Secondary Metals; E. R. Darby, chairman.

2 p. m. On Light Alloys; H. W. Gillett, chairman.

4 p. m. Annual Lecture.

Thursday, Feb. 23. 9.30 a. m. On Copper; W. H. Bassett, chairman.

2 p. m. On Precious Metals; G. F. Kunz, chairman.

Friday, Feb. 24. 9.30, 11 and 2; Sub-Committees of B-2, American Society for Testing Materials.

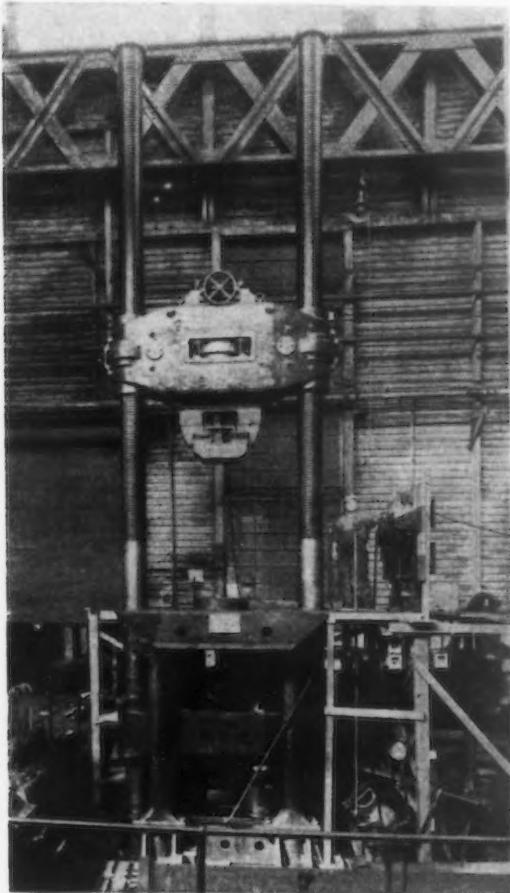
Prof. C. H. Mathewson of Yale University will deliver the annual lecture on the subject "Twinned Structure in Wrought Metals."

A feature of the annual dinner on Wednesday evening will be an intimate talk on the production of copper and copper alloys by W. H. Bassett, of the American Brass Co.

HYDRAULIC TESTING MACHINE

Universal Tests to Capacity of 1,000,000 Lb.—
Designed for Car Frames

ANOTHER large testing machine of 1,000,000 lb. capacity has been completed by the Southwark Foundry & Machine Co., Philadelphia. It differs markedly from the machine of similar capacity described in THE IRON AGE of April 14. The new machine, which



General View of the Machine, Showing Length of the Screws and Arrangement of Platen and Upper Crosshead

is from the designs of the Emery-Tatnall Co., was built for the Symington Co., Rochester, N. Y., and designed primarily for testing side frames, couplers, yokes and other parts of railroad car construction.

As the machine is available for both tension and compression, it is of the universal type. It has two columns in place of the four in the earlier machine, and operation is by means of four hydraulic cylinders where the earlier machine had but one. There is a clear distance between the screws of 7 ft. 1 in., the fixed bed or upper platen having a width somewhat greater than this and a length of 10 ft. Control and measuring apparatus are all on this platen, so that everything is under the hand of the operator.

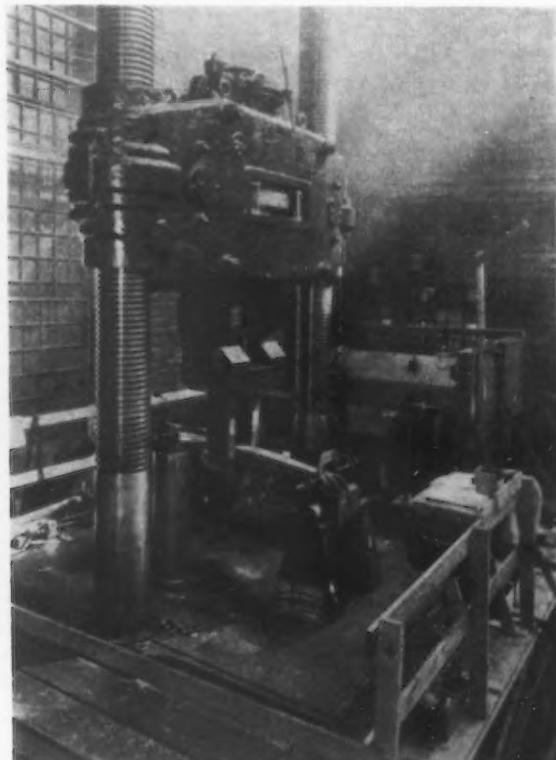
One illustration taken in the erecting shop shows the machine set up with a side frame undergoing compression test. When erected in the laboratory this platen will be flush with the floor, while the lower platen, the hydraulic cylinders, etc., will all be in the basement.

Essentially this machine consists of a fixed bed carrying four hydraulic presses (18-in. plungers) and a moving yoke. This yoke consists of a crosshead between the presses, as shown in the general view. The crosshead carries the two 14-in. screw columns, which in turn carry the top cross beam containing the weighing apparatus. This beam is carried on the columns by means of two inclosed nuts which are driven by a motor and suitable gearing on the rear of the beam. This top beam, therefore, is adjustable on the columns. Its position is determined by using the motor and rotating the columns, but they are not ro-

tated for placing stress on the test piece. Actual power for testing is given by the hydraulic presses below the table, which raise or lower the screw columns and the yokes as a unit.

These presses force the whole yoke, consisting of the two cross beams and the two columns, up or down as required. The columns slide through bushings near the bottom of the main bed. The weighting system consists of an Emery hydraulic support in the top cross beam. This support is connected with hydraulic indicators not visible in the illustration. The edge of the support is shown in the opening at the center of the massive beam.

The cast steel yoke in which the support is carried is balanced in such a manner that vertical loads in either direction on the upper platform or holder become loads of compression on the support. The view shows compression heads in place. These, however, are readily removed and spherical seated tension holders may be substituted for them. Hydraulic power is furnished with a motor-driven Hele-Shaw pump, oil being used in the hydraulic system. The reservoir holds 55 gal. of oil. As the ratio between the oil cylinder



Machine Set Up for a Test. This view shows operating and recording equipment located on the table

plungers and the effective pump area is about 500 to 1, the full 1,000,000-lb. capacity is obtained with an oil pressure of about 2000 lb. total, or some 1000 lb. to the square inch.

Twentieth Annual Meeting of Institute of Metals

The twentieth annual general meeting of the Institute of Metals, which will be held in London on March 7 and 8, will include several interesting functions. The new president, Dr. W. Rosenhain, will be inducted into the chair by Sir John Dewrance, and will deliver his presidential address. Afterward 16 papers will be read and discussed. These include contributions from metallurgists in Germany, Japan and the United States, as well as Great Britain. The official program of the meeting includes a notable list of new members, 123 in all, which brings the membership close to the 2000 mark. It is striking to note what a large proportion of the new members reside abroad. Among the latest applicants for membership are André Citroën, the famous French motor car maker, and representatives of the French mint and ministry of marine.

DOUBLE-MAGNET LIFTING

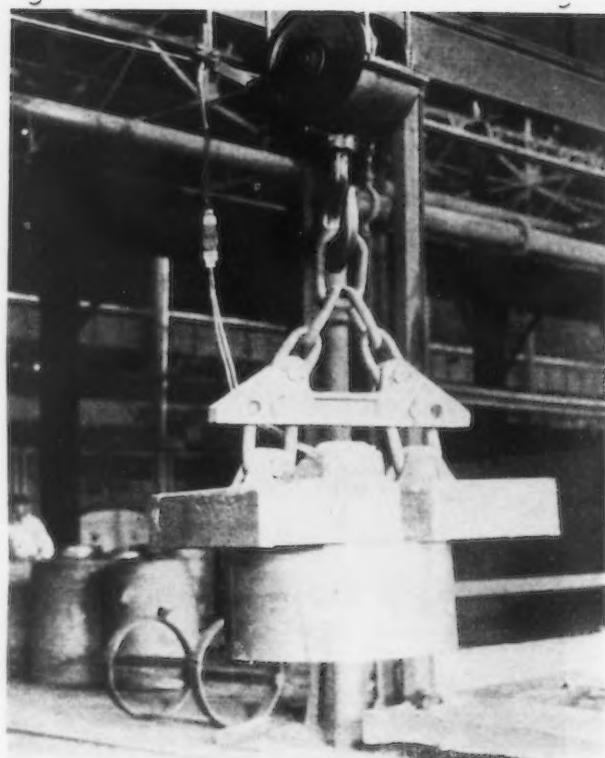
Two Magnets Obviate Expensive Binding of Strip Steel Coils

STRIP steel coils, before they leave the coiling machines at the Superior Steel Corporation plant, Carnegie, Pa., are bound with a single band around the middle of the circumference, and another across the center to hold the inside end of the strip. This is sufficient binding, as the coils are immediately piled on small trucks, and, in lots of 12, are carried to the annealing department. There they are transferred to buggies, the binding is removed and the buggies are pushed into annealing furnaces.

All of the coils, regardless of their weight, the thickness or width of the metal, are 28 in. across the outer diameter. Because of this, the center hole will vary between 10 and 20 in. in diameter. The coils run from 1200 to 1800 lb. in weight, while the strip varies in width from 14 to 20 in. Every coil is bound in the same manner.

In the annealing department, two lifting magnets on a special spreader beam handle these strip steel coils. They were supplied by the Electric Controller & Mfg. Co., Cleveland. Either one of these magnets will lift the heaviest coil, if that coil is bound securely. But with the present simplified method of binding, the center turns of the coils will pull out under the pulling power of a single magnet. It was, therefore, a simple problem—two magnets versus more elaborate binding of every coil—the solution of which dictated the purchase of the two magnets.

As stated before, the outer diameter of every coil is 28 in. The spreader beam designed for this job holds the two lifting magnets so that their centers are exactly that distance apart. This brings the center of pull of each magnet above the outer edge of the coil to be lifted. The major part of the lifting of a coil is done at the outer edges, so there is no ten-

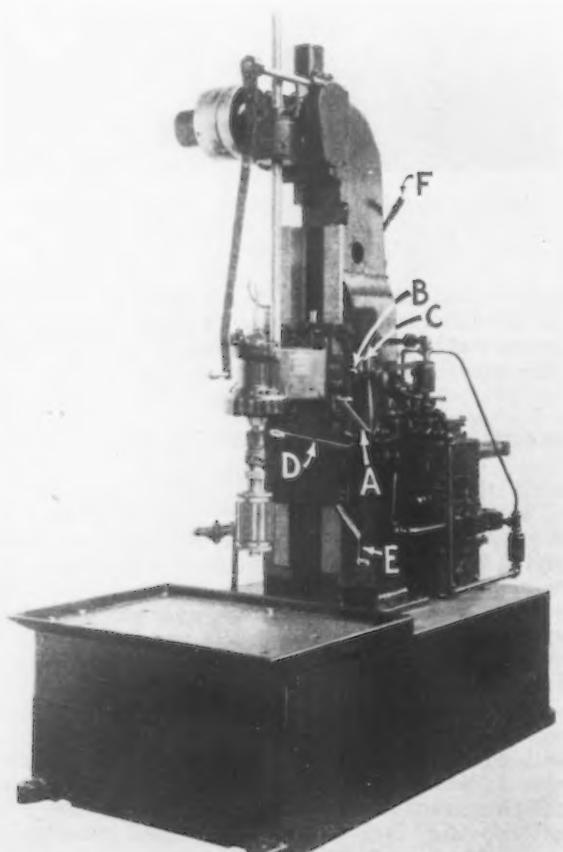


Lifting Coils of Strip Steel by Two Magnets, to Avoid Uncoiling Action Frequent When One Is Used

dency for the steel strip to come uncoiled. With two lifting magnets, the Superior company has done away with elaborate, expensive binding of coils on a job where, under any circumstances, the binding can be only temporary.

Single-Spindle Lapping Machine

For use where production requirements do not warrant the installation of a multiple-spindle lapper, and



Automatic Operation May Be Provided

also for corrective lapping, the Moline Tool Co., Moline, Ill., is offering a single-spindle unit, designated as the No. 12.

The machine is available with or without the automatic feature of the company's multiple-spindle lapper, by means of which the spindle makes a predetermined number of strokes and then withdraws and stops. The accompanying illustration shows the non-automatic machine.

The base of the machine forms a reservoir and settling tank of about 2 bbl. capacity for the lapping compound. Steady flow of the compound on the lapping tool is maintained by a pump and system of piping which delivers the compound at the rate of about 30 gal. per min. The fluid drains into two drawers, which may be removed conveniently for cleaning. From the drawers it overflows into the first compartment of the base and then flows over baffle plates into successive compartments, from the last of which it is again pumped to the laps. A pan table, the working surface of which is 35 x 45 in., is bolted to the base for mounting suitable fixtures.

The drive may be either from a motor or a countershaft to the clutch pulley on the machine, from which the power is transmitted to the spindle through spiral and spur gears. The multiple disk clutch is operated by a lever which also operates a brake, stopping the rotation of spindle the instant the clutch is disengaged.

Reciprocations of the slide carrying the spindle are obtained by an Oilgear pump unit and are controlled by levers at the front of the machine. The stroke can be set for any length up to 24 in., and the rate of reciprocation can be changed by the adjustment of a valve on the pump. All reciprocating parts, such as the rail, slide and heads, are made of aluminum to minimize the weight of the reciprocating parts.

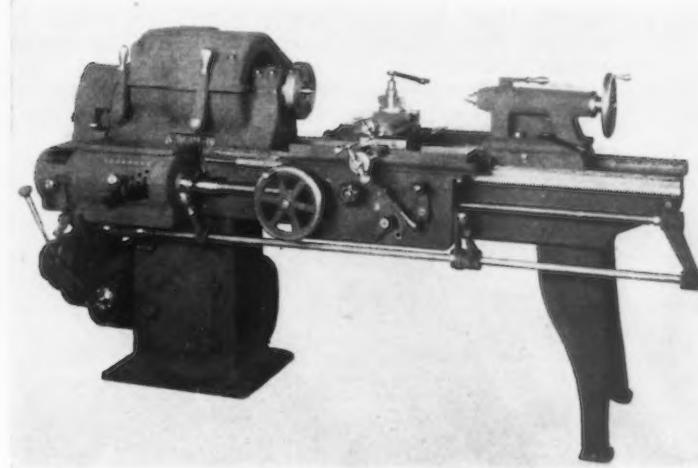
In the machine illustrated the slide is at the bottom of the stroke, but in the starting position the slide is up. To start the cycle of operations, lever A is pulled down, causing the slide to travel down to the position shown where pin B strikes knock-out C, re-

versing the direction until pin on lever *D* strikes knock-out *C*, again repeating the working cycle. To remove the lap from the work, the lever *D* is pulled down, the knock-out pin passes the knock-out, and the slide travels upward until pin *E* throws lever *A* into the neutral position. The machine is equipped with a One Shot centralized oiling system, which is operated by the lever *F*.

The slide can be set to give a maximum distance of 47 in. from the spindle nose to the table. For motor drive, a 5- to 7½-hp. 1200-r.p.m. motor is recommended. The shipping weight of the machine is approximately 6900 lb.

Multi-Speed Lathe With Four Highest Speeds from Gear Box on the Leg

The Chard Lathe Co., Newcastle, Ind., has brought out a multi-lathe, arranged so that the four highest speeds are obtained from a gear box on the leg of the machine, without use of any of the gears in the



headstock. Eight additional speeds are obtainable through the headstock when heavy cutting is desired. The lathe may be driven either direct from a lineshaft or from a motor.

The four-speed gear box is cast integral with the leg of lathe and includes a bracket for mounting the motor. The drive from the motor to the gear box is by silent chain, and from the gear box to the spindle is usually by means of a wide belt. The latter may be by silent chain if desired. All gears in the gear box are hardened and all shafts are mounted in ball bearings and run in a bath of oil.

Three changes of speed are obtainable in the headstock, two through gears and one direct to the spindle, giving 12 spindle speeds that provide a finely divided range of surface speeds. Forward speeds are obtained through a friction clutch operated by levers on a rod beneath the lead screw, which levers also control a brake for stopping the spindle. All other speeds are obtained through sliding gears. All speeds are selective and all levers are within easy reach of the operator.

Power from the gear box to the spindle is transmitted to a pulley that is mounted on a sleeve on the spindle, and on which two gears are keyed. These gears transmit the power to the gears on the back shaft which have clutch teeth cut on the face of hubs. The clutches slide on keys on the backshaft to engage either of the gears on this shaft. The spindle and back-shaft are made hollow to permit constant oiling of the moving parts.

Application has been made to sell the East Side plant of the Hydraulic Steel Co., Cleveland, which has been operated for several years under a receivership. It is stated that the reorganization committee, of which Walter C. Jenney, Philadelphia, is chairman, has been assured of a cash bid of \$1,000,000 for the plant.

Shear for Slitting 3/16-In. Material

A hand-operated slitting shear with capacity for material 3/16 in. and less in thickness has been added to the line of the Whitney Metal Tool Co., Rockford, Ill. The machine, designated as the No. 6, is of alloy steel, drop forged, and all wearing parts are hardened.



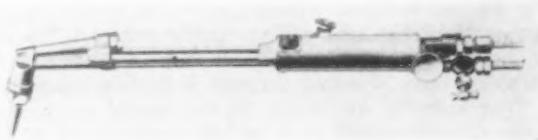
The Eccentric Crankpin and Trunnion Bearings of the Shear Are of Roller Type

Eight Additional Speeds Are Obtainable Through Headstock Gears of the Multi-Speed Lathe

The eccentric crankpin and trunnion bearings are of roller bearing type. The shear blades are 4½ in. long and are inserted, the lower blade being adjustable to compensate for wear.

Cutting Blowpipe Designed to Prevent Backfire

One source of delay often experienced when cutting with an oxy-acetylene blowpipe is known as the "backfire" or "flash back." When the blowpipe head gets very hot, or accumulates spatterings of hot metal



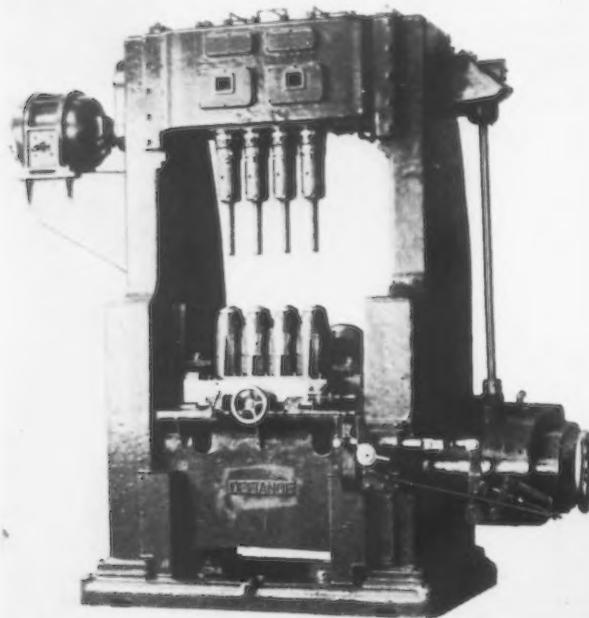
on the tip, or is accidentally brushed too close to the molten metal, the gas stream (a mixture of acetylene and oxygen) will start burning back in the passageways leading from the mixing chamber. When this occurs the oxygen is turned off momentarily, in order to extinguish the flame and prevent the interior of the blowpipe from being melted.

To avoid such delays, the Oxweld Acetylene Co., 30 East Forty-second Street, New York, has developed a new cutting blowpipe, known as C-14, which will not backfire, it is stated, even under the most severe operating conditions. Several improvements in minor detail are also embodied, such as the replacement of cast parts with brass forgings. Nozzles for the new C-14 are interchangeable with the older type C-2. The blowpipe can also be used with either medium-pressure or low-pressure acetylene.

Single-Purpose Fixed-Center Cylinder Boring Machine of Heavy Type

A single-purpose, four-spindle, fixed-center cylinder boring machine for the rough boring, semi-finishing or reaming of traction and gas engine cylinders having any number of bores or automobile engine cylinders cast en bloc or singly, has been brought out by the Defiance Machine Works, Defiance, Ohio. This machine, designated as the extra heavy No. 8, is a production unit with capacity for 15 to 25 cylinder blocks per hour.

Rigid construction is a feature. The frame and base castings are of heavy design, with cast ribs. The slides



Traction and Gas Engine Cylinders or Automobile Engine Cylinders, Cast en Bloc or Singly, May Be Rough Bored, Semi-Finished or Reamed on a Production Basis

are broad and long and are scraped and gibbed. The feed mechanism is of unit construction, affording easy access, and is entirely inclosed. The feed gear box retains a sufficient level of oil to provide splash lubrication. All feed shaft bearings are bronze bushed and end thrusts are taken by ball bearings. Feed changes are made simply by removing a gear case cover and changing two gears. Hand adjustment for the table feed is provided, but when the machine is in operation the table automatically feeds the work to the boring tools. When the cut is finished, the table reverses automatically to fast travel, returns to the loading position and stops until engaged to bore the next cylinder. By means of double clutches in the feed box the machine can be set to feed, disengage, rapid travel up, feed again, disengage and automatically return. The drive to the spindles is either by belt from a three-step cone pulley or from a motor through a flexible coupling.

The spindles are made of hammered steel, are of large diameter, and each spindle is mounted in three bronze bearings. The nose bearing is conical in shape and has a convenient means of adjustment for taking up wear. Each spindle floats between two sets of ball bearings which receive the end thrusts. A friction brake is provided for instant stopping of the spindles. The boring tool is fitted to the spindle by a tapered shank and held in place by a long bolt extending through the spindle from the top, which eliminates the possibility of its being extracted from the spindle on the return feed.

The auxiliary sliding table is operated in and out by means of screw feed driven by a separate motor mounted on the back, which actuates a right and left hand slip friction clutch. A sliding table, when used in front of the machine, permits the loading of blocks over the fixture. The latter has revolving bushings into which the pilot bars enter before the cutting takes place.

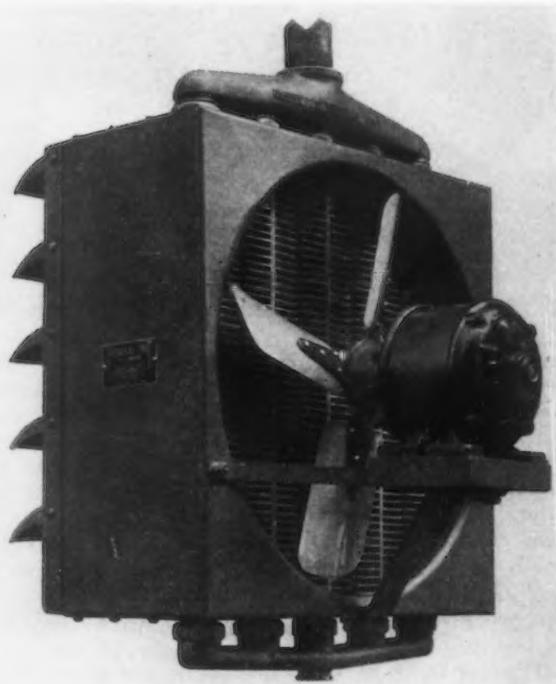
A pair of jack screws of large diameter serve to

raise and lower the table. Each screw is retained in a jack and actuated by a heavy worm and worm gear through a bronze nut which is sleeved to the worm gear. Moving parts are packed in grease. A simple adjustment is provided for advancing or retarding the screws independently in order to maintain perfect alignment of the table. Thrust is taken by ball bearings. For driving the machine 15 to 25 hp. is required. Floor space occupied is 11 ft. x 6 ft. 10 in., and the net weight of the machine is 21,330 lb.

Unit Heater for Use of High-Pressure Steam

Unit heaters designed with fins and cores integrally cast and with strength in radiator sections sufficient for working pressures up to 250 lb. are being marketed by the Mechanical Mfg. Co., Pershing Road and Loomis Street, Chicago. Each radiator section, complete with fins, is cast in one piece of a special aluminum alloy. The units are tested to 800 lb. hydrostatic pressure in the shop. The cores are designed so that they offer the least possible resistance to the flow of air directed against them by the motor-operated fan, which is mounted on a bracket secured in turn to the metal casing.

Louvres, which can be adjusted independently of each other, are provided across the front of the radi-



Fins and Cores Are Cast Integral, and Radiator Sections Are for Pressures Up to 250 Lb.

ator sections. The intake manifold is so proportioned that distribution of steam is uniform to all connected core or heater sections. The table shows the performance of this heater unit.

Steam Pressure, Lb. Gage	Air Intake, Deg. Fahr.	Equivalent Direct Radiation, Sq. Ft.	B.t.u. Output
1	60	570	137,300
10	60	662	159,000
100	60	1030	246,900

The standard model 20 "thermal unit" delivers 2600 cu. ft. a minute, with a 1/6-hp. motor operating at 1135 r.p.m.

Hungarian Pig Iron Output Higher

Production of pig iron in Hungary in 1927 totaled 215,200 tons, against 132,900 tons in 1926, according to a report received by the Iron and Steel Division, Department of Commerce, Washington, from Assistant Commercial Attaché John A. Embry, Vienna. Imports of pig iron were 30,000 tons in 1927 and 26,300 tons in 1926.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY
DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Statistical Data Concerning the Chief Consuming Industries Indicate That:

Expansion of activity in chief consuming industries is likely to be moderate.

Car and locomotive buying in January slumped badly from the high level of December.

Automobile production is clearly expanding, with the seasonal peak two or three months ahead.

Building volume continues large;

residential building is the backbone; structural sales have not held up, but are now improving.

Outlook for tank plates in petroleum States should improve, as storage of oil may become a larger element.

Iron and steel exports have been much lower, December showing the smallest movement of the year.

HERE is no question but that the placing of orders for steel has been active, but there is some question as to whether the volume of orders represents current requirements. It remains to be seen whether buyers have not anticipated their requirements sufficiently to produce a lull in ordering later on. Arguments on both sides of the question may be brought forward. Perhaps the following discussion will enable the reader to draw his own conclusion.

Production Goes Above Demand Line

WE present herewith a revised chart of our composite demand line, together with the production of steel ingots. The composite demand line has been recalculated, using revised figures where necessary, and in all cases indexes of seasonal variation have been reworked. The weights used for averaging the indexes of activity in the various steel-consuming industries have been revised, also. Although we believe that the result is considerably more accurate than its predecessor, it is notable that, as often happens in such cases, the refinements introduced have made no great difference. Indeed, the sound conclusions based on the old chart were sufficient to demonstrate its substantial value.

The composite demand line, representing the average activity in the chief iron and steel-consuming industries, ceased to decline in December. In fact, it showed a slight gain in that month, which is note-

worthy in view of the large decline during the three preceding months. Evidently operations in the chief consuming industries were stabilized temporarily at about the average level of the last seven years. Declines occurred in railroad traffic, building activity, mining (including petroleum), and in exports; but these declines were offset by increases in general manufacturing, machine tool orders and automobile production. The most notable increase occurred in the automobile industry.

Meanwhile steel ingot production, adjusted for seasonal variation—as are nearly all our curves—increased quite sharply. In November it had fallen below the average of the last seven years and it had been below the level of the composite demand line since last August. Its position had corrected the excesses of the preceding four months and probably resulted in the accumulation of considerable unfilled requirements. Thus, in December, steel production rose to the level of the demand curve again and in January it made the sharpest advance that has occurred since April, 1923.

This recent expansion of the ingot output seems to have been temporarily justified or even required by the increased volume of orders from railroads and automobile manufacturers. But in the case of the railroads, at least, the orders were not based on current activity; and in general it appears that a good deal of the business was driven in by advances in prices. Undoubtedly the demand line will not show any such rise

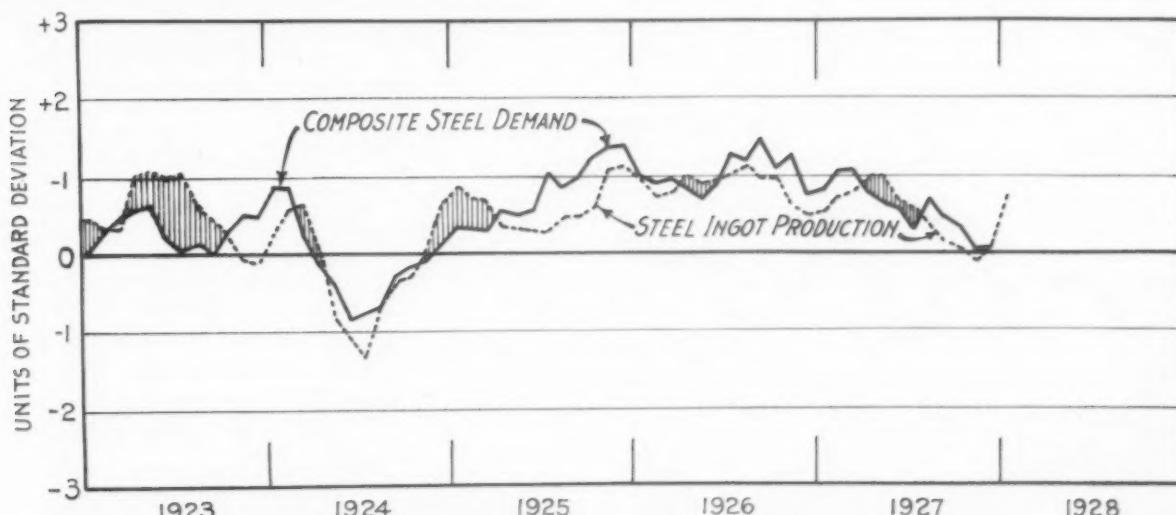


Fig. 1—Current Steel Production Made in January the Sharpest Advance in Nearly Five Years and Is Above the Curve of Composite Demand. The outlook for the immediate future is encouraging

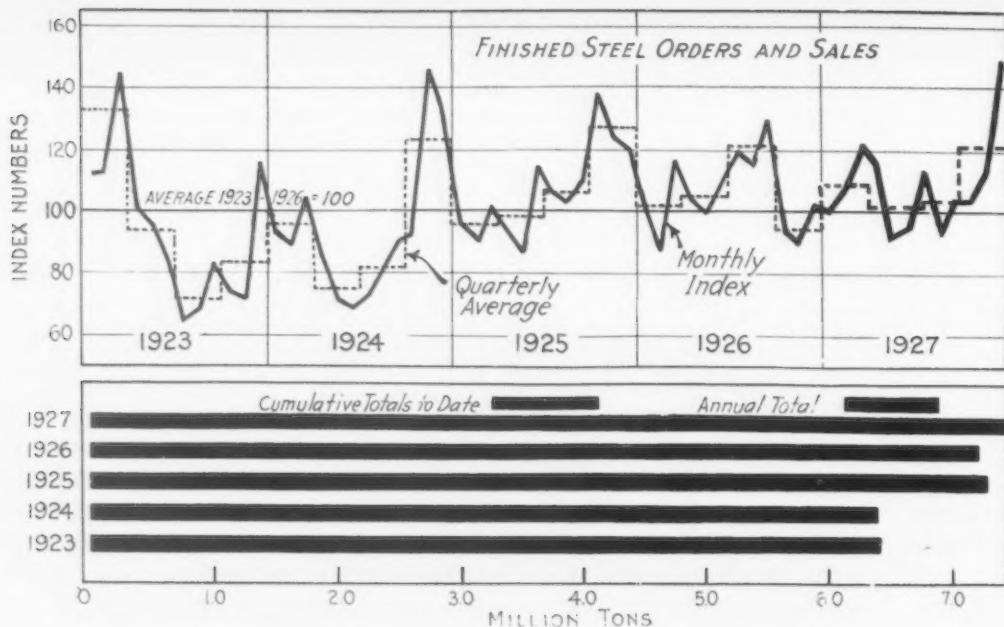


Fig. 2—Buying of Finished Steel Made a Great Spurt in December, Reflecting Accumulated Requirements. The peak of resultant production may follow in February or March

in January as occurred in the production curve, and it seems quite probable that steel production may be working into a position similar to that of early 1925, when a temporary excess developed. It is doubtful if production can hold the January pace. It should increase in February and March, which would be a normal seasonal occurrence. But in view of the sharpness of the gain in January it may be doubted if the full seasonal gain will occur during both months.

Conditions in Particular Lines

Of course, this suggestion is based partly on the doubt that February and March will show a sharp rise in the composite demand line, which brings up the outlook in the chief consuming industries. January estimates indicate that railroad freight traffic continued to make an unfavorable showing, though the declining trend was interrupted. Car loadings during the recent weeks indicate that the decline in loadings of miscellaneous and merchandise traffic has been checked. The recovery in general business, which we anticipate, should become apparent in increased railroad traffic before the end of February. Good buying of rails and recent reports of large equipment orders are encouraging. It must be admitted, however, that there is as yet no definite indication of any large gain in railroad requirements.

Manufacturing industries (excluding iron and steel and automobile production), after declining steadily between June and November, held about level in December. It is improbable that there will be much change in January, allowing for seasonal variation, but we look for improvement soon. Indications of an

upward trend in unfilled orders and a reduction in stocks of manufactured products appeared in December. One favorable indication, too, is the fact that machine tool orders gained sharply in that month. Some let-down probably occurred in January, but seasonal developments and improvement in general business should bring gains in February and March.

The *automobile industry* is clearly expanding. Though production was small in December, it made a greater recovery than usual for the season and all indications are that the output will be steadily increased. The seasonal peak in the automobile industry does not come until April or May, and there should be some large buying of sheets, strips and other automobile material between now and that time.

The last three months of 1927 brought a larger volume of *building contracts* than did the first quarter, and January showed improvement both in building permits and in contracts awarded. A continued good volume is indicated, so that the outlook for the demand for structural steel, nails and common pipe seems good.

Mining activity, including petroleum production and drilling, is hardly satisfactory and the prospects are but fair. The outlook for the oil industry, however, is such as to indicate that improvement will occur during the year. And when such improvement does occur it is probable that oil companies will for a time be encouraged to accumulate more storage oil, which would bring a better demand for tank material. Drilling activity is at a low ebb, with no improvement in immediate prospect.

Agricultural prosperity appears to have shown no improvement during the last month or two. We note

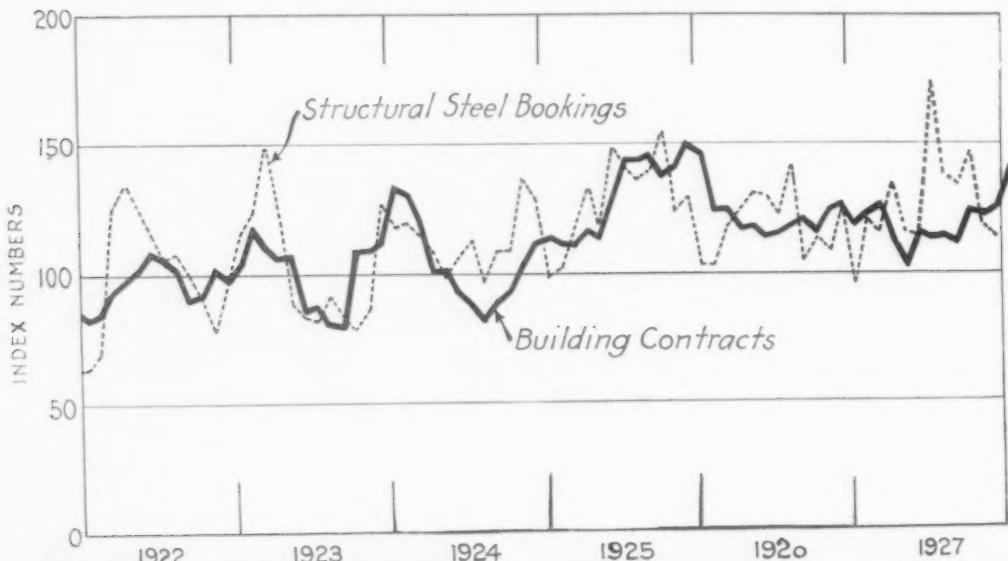


Fig. 3—Building Contracts Gained Sharply in January. Structural steel bookings dropped badly in December, but should resume a high level in the spring. January reports support this view

that in January the sales of the mail order houses fell off more than usual from December. Such sales, however, were above a year ago and trade reports continue to indicate good activity among the manufacturers of farm machinery. On the whole, the agricultural demand for steel products should be fair to good.

As to exports, we find that, considering the season, the foreign shipments of iron and steel fell to the lowest point of the year in December, when our adjusted index was only 4 per cent above the average of the last

preceding months. In the past, reaction has quickly occurred following such a run-up in buying. This has, no doubt, been due in some cases to the fact that buyers have placed orders amply covering their requirements for some time ahead, and then have awaited fresh weakness in the steel markets before again making purchases. Something of this procedure is apparent in the present instance, but it seems that a considerable part of the December ordering was the result of current or nearby requirements, and if we are correct in

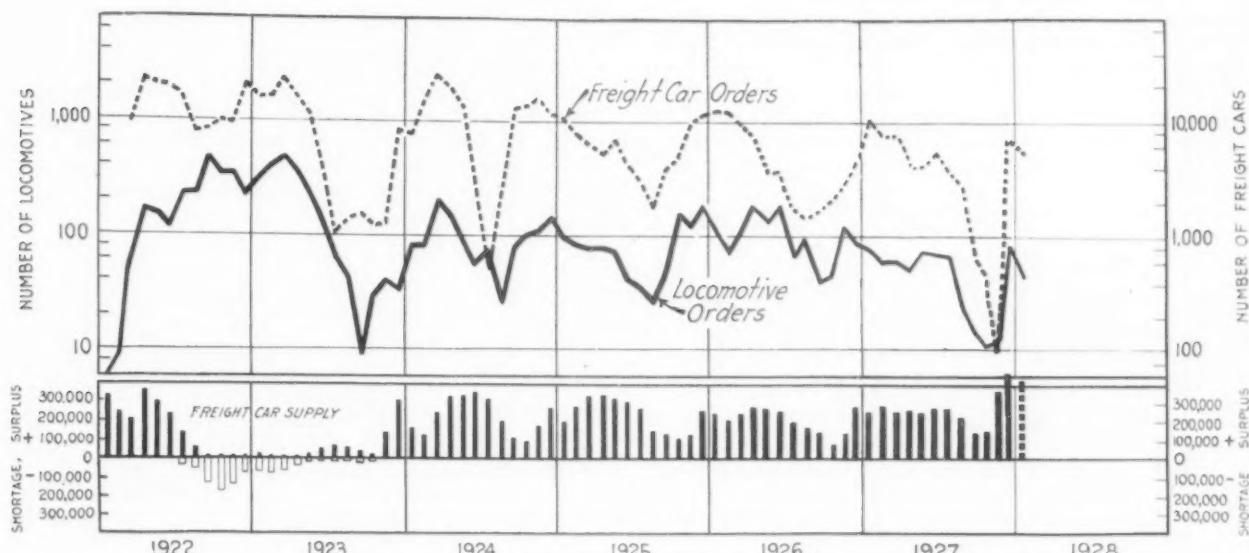


Fig. 4—Locomotive and Railroad Car Orders Dropped Sharply from December Levels. Good-sized orders in early February presage betterment in demand for certain steel products

seven years. This compares with 10 per cent above in November and 22 per cent above a year ago.

On the whole, the prospects favor the conclusion that there will be a moderate expansion in the activity of the chief consuming industries, particularly in automobile production and in general manufacturing. Building activity promises to be well sustained and railroad freight traffic should recover within a month or two. But steel production has gone ahead so fast that there is some danger now that it will unduly anticipate requirements.

Heavy Buying Featured December

AN extraordinary wave of buying of finished steel developed in December. The total tonnage of sheets, castings, fabricated structural steel and fabricated steel plates booked in that month was higher than in any other month in recent years, if not record breaking. (Our index number represents about 50 per cent of the finished steel business, but it does not include bars, pipe, tin plate, wire or nails.)

This expansion reflects postponed buying and accumulated requirements on the part of consumers. It was due in part also to price advances, which were doubtless made with a view to driving in business. Of course, the bulk of the orders was placed at the previous low prices. Accordingly, the December buying movement may not carry through. The fact remains, however, that it brought the total sales for 1927 above those of any recent year, including 1925. It is a sad commentary on the price situation in the industry that, with such a volume of business, the profits of the manufacturers should have declined so materially in 1927.

Such an increase in buying as occurred in December, coming at a period of very low production, is bound to give a stimulus to steel making that will last for two or three months. Similar spurts occurred in March, 1923, and December, 1923, and in these cases the peak of production was not reached until three months later. Other spurts came in November, 1924, and October, 1925, and these were followed by peaks in production within two months. It, therefore, seems highly probable that the production curve will continue to rise at least through February and probably through March.

Precedent, however, casts some doubt on the suc-

cessful outcome of the December buying. It is reasonable to infer that there will be no such large slump in steel buying during the next half year as occurred in early 1925.

Building Contracts Hold Up Well

CONSTRUCTION activity gained sharply in January. The square feet of floor space in contracts awarded actually increased a little, being 63,717,000, although a large decline is usual in January. As a result, our adjusted index for the month is 142 per cent of the average for 1921-1925, against 126 per cent in December and 119 per cent a year ago. This represents the highest annual rate of construction activity since January, 1926, when the decline that carried down to the middle of last year began. Since May, 1927, the adjusted index of construction activity has increased 38 per cent. Moreover, building permits showed more than the usual seasonal gain in January, which proves that the residential type of building in cities and towns is contributing to the total gain in construction. This rise in permits is a strong indication that the upward trend in building will continue for a time.

Bookings of structural steel in December fell to the lowest level since June, and were below their average relation to building contracts (see Fig. 3). The sharp rise in contracts, however, forecasts a gain in structural steel bookings; this forecast is supported by current trade reports for January, which are to the effect that the average weekly awards amounted to about 50,000 tons of fabricated structural steel, against only 30,600 tons in December.

Equipment Buying Slumped After Big Gain

IN one case, at least, we already know that a December spurt in buying did not carry through into January—namely, in the case of railroad equipment. Freight car orders in January were hardly fair and locomotive orders fell to negligible proportions.

As reported by *Railway Age*, freight car orders in January numbered 2098, the great bulk coming from Southern and Southwestern roads. The figure compares with 14,114 cars in December, 17,196 cars in January, 1927, and 11,531 cars in January, 1926. Nevertheless the total for the last three months shows a fairly good

level, so that a gain in February may yet save the day, as the sharp gain in December did. Some hope of this appears in current reports of large inquiries, and several good-sized orders have already been placed in early February.

We have to note that statistical indications as to the extent of freight car buying during the next month or two do not warrant any great optimism. In the first place, the volume of freight traffic in January would indicate no increased requirements; in the second place, the surplus of freight cars as last reported was the largest that has existed at any time in the last seven years. The surplus on Jan. 23 is reported at 421,393 cars, which compares with about 275,000 a year ago. There thus appears to be little reason to expect a sustained gain at this time. Moreover, several railroad executives have recently expressed a lack of optimism concerning railroad earnings during the next few months.

Only two locomotives are reported to have been or-

dered in January, and both of these orders came from industrial concerns. This is the smallest month's business on our record. Total shipments of locomotives, including steam and electric, fell to a new low, amounting to only 47. In spite of the decline in shipments, unfilled orders also decreased and amounted to only 222. These are the official Government figures for the entire month of January.

As shipments declined by 25 locomotives, and unfilled orders decreased by only 10 locomotives, one might infer that the total orders for the month amounted to 15 locomotives. As in the case of freight cars, the number of locomotives in storage is large. Also the percentage of bad-order locomotives is fairly low. The number in storage on Jan. 1 was 7490 against 4601 a year ago. Bad-order locomotives on Jan. 15 numbered 9140, against 9371 on the same date in 1927.

Naturally, we find that employment in railroad equipment manufacturing establishments was at a very low ebb in December.

Coke Production at Increased Rate in December

WASHINGTON, Feb. 14.—Output of by-product coke in December was 3,646,000 net tons, an increase over November of 146,000 tons, or 4.2 per cent, according to the Bureau of Mines. The average daily rate of production also increased, from 116,667 tons in November to 117,612 tons in December, a gain of 945 tons, or 0.8 per cent. Production of beehive coke in December remained practically stationary, the total being estimated at 377,000 tons. Production of all coke amounted to 4,023,000 tons, of which 90.6 per cent was contributed by the by-product ovens and 9.4 per cent by beehive ovens.

Preliminary totals for the calendar year 1927 show a production of 43,921,000 tons of by-product coke and 7,004,000 tons of beehive coke. In comparison with 1926 this is a decrease of 1 per cent in by-product coke output and of 44 per cent in beehive production.

Large Construction Activity in January

Building contracts in January in the 37 States east of the Rocky Mountains are reported by F. W. Dodge Corporation at \$427,169,000. This represents the second largest January on record and is a gain of 11 per cent over January, 1927. It is a decline, however, of 11 per cent from the preceding month. Residential buildings accounted for 45 per cent of the total, continuing the lead which this type of structure has held for several years. Public works and utilities were 17 per cent, commercial buildings 16 per cent, and industrial buildings 9 per cent.

Heavier Steel Furniture Orders

New orders for steel furniture in December are reported by the Department of Commerce at \$2,850,314, comparing with \$2,476,230 in November. The December total was the largest since March and was somewhat larger than that of December, 1926, at \$2,802,325. For the year, however, there was a falling off of 2 per cent from 1926, the total being \$30,760,343, against \$31,393,171 in the earlier year.

Shipments ran a little ahead of new orders in both years. In December, however, they fell below orders, being reported at \$2,740,602. Unfilled orders at the end of the year are given as \$1,413,880, a reduction of about 10 per cent from the figure a month earlier

and about the same amount below the figure at the end of 1926.

Orders for steel shelving in December are reported at \$619,276, the largest figure since last June. This compares with \$574,763 in November, and with \$561,979 in December, 1926. Orders for the year were \$7,351,122, a slight increase over 1926. Unfilled orders at the end of the year were \$605,809.

Commercial Stocks of Coal

Bituminous coal stocks in hands of commercial consumers on Jan. 1 are estimated by the United States Bureau of Mines at 55,500,000 net tons. This is almost precisely the same amount as a year earlier and is 13 per cent greater than the total of Jan. 1, 1926. It represents a shrinkage of about 10 per cent from the Oct. 1, 1927, figure of 61,900,000 tons. This shrinkage has been progressive since April 1 last, when a record tonnage of coal was on hand, estimated at 75,000,000 tons, or about double the total of a year before that.

It is estimated that the Jan. 1 total represented about 41 days' supply. This was not equally distributed among various users, however. Steel mills had a supply figured at 45 days; by-product coke plants at 38 days; other industrial plants at 44 days; coal gas plants at 79 days; electric utilities at 58 days; railroads at 41 days, and coal dealers at 27 days.

Of the steel plant total supply, 2,273,786 tons on Jan. 1, steam coal accounted for 1,296,376 tons or 42 days' supply, and gas coal, 977,410 tons, or 50 days' supply. By-product plants had 6,437,676 tons of coking coal, including 1,546,864 tons of low-volatile coal (48 days' supply) and 4,890,812 tons of high-volatile coal (40 days' supply).

The Industrial Steel & Supply Co., 26 East Jackson Boulevard, Chicago, has been organized to buy and sell industrial and railroad iron and steel scrap and industrial and railroad supplies. Officers of the new company are Lawrence C. Ryan, formerly vice-president and treasurer of the Standard Forgings Co. and the St. Louis Forgings Co., president and treasurer, and John T. McEnroe, formerly vice-president of the Benjamin Colitz Co., vice-president.

Walter Erman & Co., McCormick Building, Chicago, dealers in old materials, have changed their firm name to Erman-Howell & Co., Inc.

Schedule of the next installments of the Business Analysis and Forecast, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Feb. 23—Position of Iron and Steel Producers; March 1—General Business Outlook; March 15—Activity in Steel Consuming Industries.

Foundrymen Prepare Program for Philadelphia Convention

Preliminary Schedule of Technical Sessions—Many Papers Arranged For—Course in Cupola Operations a New Feature

THE program committee of the American Foundrymen's Association, in arranging for the program of meetings for the thirty-second annual convention of the association at Philadelphia, May 14 to 18, announces the following tentative schedule of technical sessions:

Monday May 14—Registration, committee meetings, and first session in cupola operation course
Tuesday, May 15—
9.30 a. m.
(1) Opening meeting and business session
11 a. m.
(2) Non-ferrous metals
(3) Steel founding
(4) Cast iron
2.30 p. m.
(5) Foundry costs and second session in cupola operation course
Wednesday, May 16—
10 a. m.
(6) Steel metallurgy
(7) Cast iron
12.30 p. m.
(8) Round table on brass founding
2.30 p. m.
(9) Foundry management
(10) Foundry coke specifications and third session in cupola operation course
Thursday, May 17—
10 a. m.
(11) General foundry practice
(12) Apprentice training
12.30 p. m.
(13) Round table on malleable founding
2.30 p. m.
(14) Sand control; fourth session cupola operation course
Friday, May 18—
10 a. m.
(15) Materials handling
(16) Malleable founding

The papers for these meetings, while not all the sessions have been definitely arranged, show promise of being some of the best, as a group, ever secured for an A. F. A. meeting. The interests of all the four branches of the industry have been considered, and in addition the varied interests of the metallurgists, executive, shop manager, engineer and practical shop man have been met. A partial list of the papers to be presented follows:

"Furnace Refractories for Brass Foundries," by H. M. St. John, chief metallurgist Detroit Lubricator Co., Detroit.

"Science in the Foundry," by E. F. Hess, metallurgist Ohio Injector Co., Wadsworth, Ohio.

"Risers, Their Need and Feed," by R. R. Clarke, alloy foundry, General Electric Co., Erie, Pa.

"Variables in Steel Foundry Practice," by F. A. Melmoth, Thomas Firth & Sons, Ltd., Sheffield, England; I. B. F. exchange paper.

"Economies in Oxy-Acetylene Cutting for Riser Removing," by G. O. Carter, Linde Air Products Co., 30 East Forty-second Street, New York.

"Sand Reclaiming in the Steel Foundry," by D. M. Scott, Gould Coupler Co., Depew, N. Y.

"Interdependence of Operating and Sales Departments in the Success of a Foundry," by K. V. Wheeler, Lebanon Steel Foundry, Lebanon, Pa.

"Theory of Cupola Operation in Relation to Practice," by R. B. Schaal, Roberts & Manders Stove Co., Hatboro, Pa.

"Automatic Blast Gate Control for the Cupola," by H. W. Crawford, General Electric Co., Schenectady, N. Y.

"Necessity for Creating a Casting Consciousness," by A. F. Jensen, Hanna Engineering Co., Chicago.

"The Schedule Fallacy," by J. J. Ewens, George H. Smith Co., Milwaukee.

"General Characteristics of Alloy Steel Castings," by J. W. Frank, Chicago Steel Foundry Co., Chicago.

"The Research Laboratory of the American Steel Foundries," by W. C. Hamilton, research director American Steel Foundries, Indiana Harbor, Ind.

"Temperature Measurements of Molten Cast Iron,"

by H. T. Wensel and W. F. Roeser, United States Bureau of Standards, Washington.

"Influences of Carbon and Silicon Variations in Cast Iron," by D. G. Anderson and G. R. Bessmer, Western Electric Co., Chicago.

"Producing High-Strength Cast Iron," by John D. Miller, Cresson-Morris Co., Philadelphia.

"Basic Principles of Management in the Foundry," by J. D. Towne, Dayton, Ohio.

"Manganese Steel," by H. P. Evans, Pettibone-Mulliken Co., Chicago.

"Stabilizing Labor and Cutting Cost by Horse Sense," by A. D. Lynch, Ohio Brass Co., Mansfield, Ohio.

"What Does the Buyer Expect for His Money?" by J. A. Marks, Packard Motor Car Co., Detroit.

"A Contribution to the Training of Labor and the Personnel of a Foundry," by A. Soupart, Director of Musee, Professional de l'Etat et des Ecoles Techniques de Morlanwetz; exchange paper of the Association Technique de Fonderie de Belgique.

"Heat Losses from a 75-Ton Hot Metal Car," by W. F. Roeser, United States Bureau of Standards, Washington.

"Surface Conditions of Castings as Affected by Core Sand Mixtures," by H. L. Campbell, University of Michigan, Ann Arbor, Mich.

"Testing Molding Sands for Durability," by M. A. Blakey, International Harvester Co., Milwaukee.

"Sand Conservation and Control in a Gray Iron Jobbing Shop," by T. F. Kiley, Brown & Sharpe Mfg. Co., Providence, R. I.

"Sand Control Methods in a Light Casting Foundry," by W. G. Reichert, Singer Mfg. Co., Elizabethport, N. J.

"Materials Handling and Its Relationship to Building Plans," by E. F. Scott, Austin Co., Cleveland.

"Reducing Scrap in the Malleable Foundry," by R. A. Greene, Ohio Brass Co., Mansfield, Ohio.

This list of papers will be supplemented by others and by reports of committees.

The technical sessions, scheduled for the mornings of the convention week, will be held in the meeting rooms of the Hotel Bellevue-Stratford and the afternoon meetings, which are all of general interest, will be held in the meeting rooms of the Commercial Museum, which will house the foundry exhibit.

The Cupola Operation Course

An innovation this year, to interest that large group of foundrymen, the practical men in cast iron foundries operating and working with cupolas, will be the four-period cupola operation discussion course. These discussion groups will be held on each of the first four days of the meeting. The leaders each day are as follows:

Monday, May 14, Dr. Richard Moldenke, "Principles Underlying Cupola Melting Processes"; Tuesday, May 15, E. J. Lowry, "Cupola Construction Details"; Wednesday, May 16, David McLain, "Cupola Charging Practice"; Thursday, May 17, H. W. Dietert, "Cupola Improvement."

Blast Furnace Practice Presented to Connecticut Foundrymen

The February meeting of the Connecticut Foundrymen's Association was held on Feb. 10 at New Britain, Conn. R. J. Linney, vice-president Chateaugay Ore & Iron Co., Lyon Mountain, N. Y., was the chief speaker. He gave an outline of the mining and preparing of ores for the blast furnace, as well as of other operations at the company's plant. Carl H. Neumann, Union Mfg. Co., New Britain, secretary of the association, announced that Walter M. Sanders, Sanders & Franklin, engineers, Providence, R. I., will speak on "Producing, Testing and Grading Molding Sands" at the monthly meeting on March 9. The Waterbury-Farrel Foundry Co. has been made a member of the association.

PIG IRON DUTY INADEQUATE

Tariff Commission Informs Congress of Present Difficulties of Administration

WASHINGTON, Feb. 14.—Difficult problems surrounding administration of the tariff act are pointed out by the Tariff Commission in its eleventh annual report to Congress. A number of them concern means of ascertaining costs of production according to requirements of the flexible provision, by which duties may be increased or decreased 50 per cent, which, in instances, the commission has found to be inadequate. A case in point relates to pig iron. The increase of 50 per cent in the duty on pig iron, proclaimed by the President, effective March 25, 1927, permitted a maximum duty of only \$1.12½, raised from 75c. per ton. "Such increased duty fails by a wide margin to equalize differences in costs of production indicated in the commission's report," it is pointed out.

It also is explained that by section 315 (flexible provision) nothing shall be construed to authorize the transfer of an article from the dutiable list to the free list or from the free list to the dutiable list, although applications have been filed with the commission requesting investigations looking toward complete removal of the duties on certain articles, or the imposition of duties on articles now on the free list. It is stated that although action by the President is limited in such cases, information obtained by the commission is available for the use of Congress.

The report directs attention to an opinion of the Attorney General that in finding the differences of costs in producing foreign and domestic articles there

should be taken into account, among other things, costs of transportation, where it is shown such differences in costs, as between foreign and domestic articles, constitute an advantage or disadvantage between the foreign and American producers. Prior to this opinion the commission had presented cost comparisons both with and without transportation costs. Since the Attorney General's opinion, Feb. 2, 1926, all cost comparisons have included transportation costs.

The most important question, it is stated, concerns principal markets of the United States where imported and domestic goods meet in competition. If the principal market is a port of entry, the transportation charge for imported goods is composed of the foreign inland freight and ocean transportation. The domestic plants may be scattered over a wide area.

"Upon what basis should domestic transportation to the principal market, wherever located, be calculated?" asks the commission. "Upon the basis of the nearest group of plants, the most distant group of plants, or on the basis of an average transportation charge from all plants?

"Under existing circumstances, it may be found that a principal market for the domestic products is at one point and the principal market for imported goods is at another point. In fact, the domestic and imported goods may not actually meet in the same market. Under these conditions should transportation for both domestic and imported articles be calculated to their respective markets only? In such an event how shall the commission determine the principal market?"

The report shows also that the ascertainment of invoice prices as evidence of production costs is not free from difficulties.

Old Foundries Can Be Brought Up to Date, Says Engineer

At the February meeting of the New England Foundrymen's Association Wednesday evening, Feb. 8, in Boston, Clement A. Hardy, engineer, Chicago, gave an address on "New Foundries for Old," in which he declared there is no foundation for the assertion often made that American foundrymen are slow to adopt modern methods, because there has been more improvement and advancement in foundry practice in the United States than in the rest of the world.

Mr. Hardy stated that almost any old foundry could be made into a new foundry at moderate cost, provided there was enough head room to permit the installation of handling equipment. He cited instances of improvements in corerooms, material yards, sand handling and the various other departments of foundries. Mr. Hardy is in favor of the raked ovens and said that some 25,000 are in use in this country. He illustrated, with a blackboard, changes just completed at the Builders Iron Foundry, Providence, R. I., where charging has been increased to 25 to 30 tons per day with only three men required for two cupolas.

In changing over old foundries to new, Mr. Hardy said the handling of flasks on the molding floor and in the yard, especially if the work is medium large, is highly important. It is very often the case that foundries use valuable space for storing flasks in the foundry.

Earl T. Bennington, manager Cleveland Electric Tramrail Division, Cleveland Crane & Engineering Co., Wickliffe, Ohio, who followed with an address on "Materials and Production Handling in the Foundry," illustrated how five or six different kinds of sand are handled efficiently and economically at the Cadillac Motor Co. plant. By this system, which has been adopted by the General Motors Corporation as standard, one man delivers 500 tons of sand per day.

With lantern slides Mr. Bennington illustrated many different ways of handling materials and products in widely scattered foundries, where gray iron, malleable and brass castings are made. Stress was placed on the push-button control in pouring, with ladies holding 300

to 400 lb. of metal. Some of the slides depicted handling materials and products in other industries, including wire and rod mills. He stated that the American Steel & Wire Co., Worcester, Mass., is making the largest coils of wire in the world, weighing 400 to 450 lb., and has capacity for 600-lb. coils to be made at some future date.

Henry M. Lane, consulting engineer, Detroit, will address the New England foundrymen at the March meeting.

Screw Machine Products Association Elects Officers

David Bell, David Bell Co., Inc., Buffalo, was elected president of the Screw Machine Products Association at the fifth annual meeting of the association in Chicago. Mr. Bell succeeds H. B. Lundberg, president Michigan Screw Co., Lansing, Mich.

S. G. Eastman, Belvidere Screw & Machine Co., Belvidere, Ill., was named vice-president and the treasurer is F. H. Fischer, Fischer Special Mfg. Co., Cincinnati. Mr. Fischer was also elected to the board of directors, other new members of which are J. J. Hagen, president Western Screw Products Co., St. Louis, and J. S. Cochran, president of the Mac-It Parts Co., Lancaster, Pa. Malcolm Baird continues as field secretary of the association, with offices at 232 Delaware Avenue, Buffalo.

E. F. DuBrul, general manager of the National Machine Tool Builders' Association, was one of the speakers at the meeting, his address being on the "Dollar Delusion in Depreciation Accounts." Following luncheon, a moving picture entitled "The Age of Speed" was shown by the Norton Co., Worcester, Mass. At the second business session it was decided to adopt a monthly business barometer which would indicate the relative amount of business obtained during each month and unfilled orders.

The Eastern division of the Screw Machine Products Association, the president of which is George Briggs, Screw Machine Products Corporation, Providence, held its annual meeting at the Crescent Athletic Club, Brooklyn, Feb. 10.

Salesmen and Purchasing Agents to Hold Cooperative Exhibit at Bridgeport

Tool steel, small tools, electric equipment, plating and general factory supplies are among the products to be shown at the cooperative exhibit of the Salesmen's and Purchasing Agents' Association, which will be held at the Pyramid Mosque, Bridgeport, Conn., Feb. 24 and 25. There will be more than 80 exhibitors. It is expected that the attendance will include visitors not only from Connecticut but from contiguous territory.

The purpose of the association, made up of buyers and sellers, is to foster better understanding of each other's problems and of the goods which are the basis of their contacts. The officers are: H. J. Behn, Hunter & Havens, president; A. H. Jones, Bryant Electric Co., vice-president; W. B. Osborne, Bussman Mfg. Co., secretary; and R. T. Phipps, Bullard Machine Tool Co., treasurer, all of Bridgeport.

Companies which will participate include:

Aluminum Co. of America, New Haven; American Hardware Co., Bridgeport; American Pulley Co., Philadelphia; American Swiss File & Tool Co., Elizabeth, N. J.; Apothecaries Hall Co., Waterbury, Conn.; Atlantic Mfg. Co., Milford, Conn.

Bassick Co., Bridgeport; Bay State Tap & Die Co., Mansfield, Mass.; Badger-Adamson Co., New York; Bridgeport Airport, Inc., Bridgeport; Bridgeport Brass Co., Bridgeport; Bussman Mfg. Co., St. Louis; Bunting Brass & Bronze Co., New York; Black & Decker Mfg. Co., Towson, Md.; Brown & Sharpe Mfg. Co., Providence; Bryant Electric Co., Bridgeport; Charles Bond Co., Philadelphia.

Cann & Saul Steel Co., Philadelphia; Crane Co., Bridgeport; Chisholm-Moore Mfg. Co., Cleveland; Cutting & Woods,

Bridgeport; Cornwall & Patterson Co., Bridgeport; Colts Patent Fire Arms Co., Hartford; Crouse-Hinds Co., Syracuse, N. Y.; Chromium Co. of America, Waterbury, Conn.

DeMatta Wire Works, Southport, Conn.; T. L. Dickenson, New York.

Economy Fuse Mfg. Co., New York; H. M. Ellsworth Co., Bridgeport; Erie Malleable Iron Co., Erie, Pa.; Edison Lamp Works, Harrison, N. J.

Frank H. Fargo Co., Bridgeport; J. B. Ford Co., Wyandotte, Mich.

General Electric Co., Bridgeport; Graybar Electric Co., Inc., New Haven.

Hanson-VanWinkle-Munning Co., Newark, N. J.; Hawley Hardware Co., Bridgeport; Hartford Belting Co., Hartford; Heppenstall Forge Co., Bridgeport; Hilo Varnish Co., Brooklyn, N. Y.; Hunter & Havens, Bridgeport; Hessel Hoppen Co., New Haven.

Lindquist Hardware Co., Bridgeport; Ludlum Steel Co., Watervliet, N. Y.

MacDermid, Inc., Waterbury, Conn.; Manning Abrasive Co., New York; Midvale Steel Co., New York.

Johns-Manville Corporation, New York.

Norton Co., Worcester.

Quigley Furnace Specialties Co., New York.

Ridge Tool Co., Elyria, Ohio; J. H. Richardson Oil Co., Bridgeport.

Seymour Mfg. Co., Seymour, Conn.; Skinner Chuck Co., New Britain, Conn.; Standard Oil Co., Bridgeport; F. B. Stevens, Inc., New Haven; S. K. F. Industries, Hartford.

Trumbull Electric Mfg. Co., Plainville, Conn.

Unishear Co., Inc., New York.

Vanadium-Alloys Steel Co., New York.

Warren Belt Co., Worcester; Wellington Kincaid Co., Bridgeport, Conn.; Westinghouse Electric & Mfg. Co., Bridgeport; J. H. Williams & Co., New York.

Yale & Towne Mfg. Co., Stamford, Conn.

Zapon Co., Stamford, Conn.

Steel Treaters to Hold Semi-Annual Convention in California in 1929

The board of directors of the American Society for Steel Treating has decided to hold a convention in California. According to present arrangements the second semi-annual meeting will be held in Los Angeles the week of Jan. 14, 1929. Twelve other national societies will cooperate in arranging a five-day program and the event will be known as the Western Metal Congress. There will be held concurrently under the auspices of the society what is designated as the "Western States Metal and Machine Tool Exposition." The success of this is announced as already assured, over 100 Eastern companies having signified their intention to exhibit. This exposition in California will not take the place of the regular National Metal Exposition to be held in 1929. This will be held as usual during national metal week, the place and date to be announced later. Information as to special trains leaving Chicago about Jan. 8, 1929, for Los Angeles will be published later.

Shipments of Sheet Metalware

December shipments of enameled sheet metalware are reported by the Department of Commerce at 307,280 dozens, valued at \$1,085,762, compared with 287,115 dozens in November, valued at \$1,147,108. The December value was the smallest since July and the third smallest of the year. For the 12 months, shipments have aggregated 3,916,930 dozens, valued at \$14,321,892.

Galvanized sheet metalware shipped in December amounted to 107,267 dozens, valued at \$398,199. This was a sharp reduction from the November total of 138,853 dozens, valued at \$544,301. In December, a year earlier, shipments were 123,381 dozens, valued at \$479,876. For the 12 months in 1927 shipments were 2,109,323 dozens, valued at \$8,041,226. This is a small gain from the 1926 total of 1,945,164 dozens, valued at \$7,950,683.

Production of galvanized sheet metalware, which held close to shipments in each year, amounted in 1927 to 2,093,805 dozens. This is a gain of 6 1/2 per cent over the 1926 total of 1,966,012 dozens. The gain in pails and tubs was more than this, for the total went up from 1,429,909 dozens to 1,668,725 dozens. There was a reduction of more than 20 per cent in other ware produced, which declined from 536,103 dozens to 425,080 dozens.

Steel Corporation's Unfilled Orders Increase 303,073 Tons as of Jan. 31

A large increase in the unfilled orders of the United States Steel Corporation was registered in January. The total on Jan. 31 was 4,275,947 tons, which is an increase of 303,073 tons over the 3,972,874 tons on Dec. 31. The gain in January over December was 518,430 tons. In November also there was an increase of 113,404 tons. The unfilled orders on Jan. 31 were the largest since March, 1926, when the total was 4,379,935 tons. A year ago the total was 3,800,177 tons. Thus the unfilled orders at the end of January, this year, were 475,770 tons in excess of those 12 months previous. The following table gives the unfilled tonnage by months, commencing with January, 1925:

	1928	1927	1926
Jan. 31.....	4,275,947	3,800,177	4,882,739
Feb. 28.....		3,597,119	4,616,822
Mar. 31.....		3,553,140	4,379,935
April 30.....		3,456,132	3,867,976
May 31.....		3,050,941	3,649,256
June 30.....		3,053,246	3,475,642
July 31.....		3,142,014	3,602,522
Aug. 31.....		3,196,037	3,542,335
Sept. 30.....		3,148,113	3,593,509
Oct. 31.....		3,341,040	3,683,661
Nov. 30.....		3,454,444	3,807,447
Dec. 31.....		3,972,874	3,960,969

The high record in unfilled orders was 12,183,093 tons at the close of April, 1917. The lowest was 2,674,757 tons on Dec. 31, 1910.

Further Reduction in Trackwork Shipments

Shipments of trackwork in the last quarter of 1927 are reported by the American Iron and Steel Institute, in revised figures, at 28,759 net tons. This is the smallest quarter for several years. Each of the three months of the quarter showed successively smaller totals than any months of the preceding two years. A slight gain was made in January, however, when the shipments totaled 9332 tons, against 9139 tons in December.

The Otis Steel Co., Cleveland, announces that it will erect an additional 125-ton open-hearth furnace at its Riverside works this year. This company completed its fifth open-hearth furnace at this plant last year.

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This Issue in Brief

Stabilizes sales by diversifying output. Even in periods of intense competition and over-production, electrical equipment manufacturer has been able to increase his business steadily by extending activities into new markets.—Page 460.

Pensions are not charity, but a business proposition. Payment of pensions to superannuated employees is a direct aid to management in keeping up efficiency, reducing accident hazards, and lowering manufacturing costs, says industrial relations counsellor.—Page 463.

Discovers way to weld gun metal. Heat the casting, before welding, to 1000 deg. Fahr., says welding engineer. After welding the rate of cooling should be about that of the original casting.—Page 465.

Muckraking era gives way to "cover it up" practice. Gross obstructions of justice are resulting from recent tendency to treat scandals with absolute silence.—Page 485.

Is there a better business barometer than pig iron production? Some statisticians regard steel ingot output as a more reliable gage. Others look upon electric power consumption with favor. But this new indicator will have to be handled with caution, as the lighting load element introduces a considerable seasonal factor.—Page 436.

Increases industrial efficiency by placing a sign bearing the foreman's name over each department. Electrical equipment manufacturer finds that this inculcates in the department head a deeper sense of responsibility.—Page 460.

Foundry saves \$10,000 a year by new mechanical-handling system. Cupola charging system alone makes a saving of close to \$5,000 a year, and in addition eliminates accident hazard.—Page 458.

What is the best way to train young executives? Some firms use the classroom method. Others find it best to give consecutive training in different departments, permitting the new man to sit in on conferences devoted to policy problems.—Page 463.

Makes large pipe out of bent plate by arc-welding. A lighter, smaller pipe can be used than in the case of riveting, declares Japanese manufacturer, as internal friction caused by rivet heads is eliminated.—Page 465.

In pack-hardening small tools such as taps and plug gages it is advisable not to heat more than two or three tools at a time, says metallurgist. The tools should be about the same size, and the rate of heating should not be rapid, else the tools will heat unevenly.—Page 469.

Can the steel industry maintain the January pace? Doubtful, says Dr. Haney, stating it appears that a good deal of business was drawn in by price advances. Steel production has gone ahead so fast that there is some danger now that it will unduly anticipate requirements, he declares.—Page 477.

Old foundries can be modernized at moderate cost, says engineer, provided there is enough head room to permit the installation of handling equipment. Some plants use valuable space for the storing of flasks in the foundry.—Page 480.

Pig iron duty is inadequate, says Tariff Commission. Finds that present duty of \$1.12½ per ton fails to equalize differences in production costs.—Page 480.

To avoid distortion during quenching of small tools, quench the pieces gently. A violent, swishing quench increases distortion and warping.—Page 470.

Accident prevention work cuts insurance rate 70 per cent. Ohio steel foundries' rate was \$2.40 per \$100 of payroll a few years ago. Now it is 70 cents.—Page 485.

If the coal industry is excused from the provisions of the Sherman law, what about the other industries? If the recommendation made by Secretary of Labor Davis is heeded by Congress, other industries suffering from too much competition may be expected to request permission to form trade agreements.—Page 485.

If you are thinking of taking on a new product, give careful consideration to standardizing it as far as possible with your present products. Important economies can be gained by making parts interchangeable, and keeping to as low a point as possible the new items to be bought, made, and stocked.—Page 458.

Shortening of small tools during pack-hardening may be reduced by raising the temperature. A tap one-half inch in diameter may contract 0.0015 in. to 0.002 in. per inch of length when pack-hardened at 1475 deg. Fahr. If the temperature be raised to 1575 deg. the shortening will be reduced to about 0.0005 in. per inch on an average.—Page 469.

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Steel Tonnage Prospect for 1928

JANUARY is a month of unusual importance in supplying an indication of the course of steel production. Some of the other months of the year may have important swings in the trend just ahead of them. The American Iron and Steel Institute report of Bessemer and open-hearth ingot production in January was reproduced on page 414 of last week's IRON AGE, indicating, with an estimate of electric and crucible production, a rate of 153,000 tons of all ingots per working day.

The past four years have been years of unusual steadiness in steel and their record as to monthly variations is therefore worthy of careful study at this time, since there is no fundamental reason for expecting 1928 to depart radically from the precedent thus set up. These four years had certain similarities and certain differences. They all had increasing production in the first three months and decreasing production in the next four months, while the last five months showed divergences.

A noteworthy point was that, while March was the high month of production in each of the four years, the respective March figures showed astonishingly little variation. The March average was 164,309 tons of ingots per working day, and the average divergence, either up or down, was only 1.67 per cent. The four Decembers preceding March, on the other hand, had average variations of 7.8 per cent from their average, which was 134,519 tons of ingots per working day. Accordingly when there was a low December there was a large percentage increase in the next three months, and vice versa. Production got to the same point in the end.

January has been showing less variation than December, but more than March. In 1924, January production was light, while in the next three years it was rather heavy. The January average in the past three years was 153,470 tons a day, conforming closely to the 153,000 tons just reported for last month. It is plain, then, that steel production is now in such a swing as to indicate that next month will do as well as March has done so uniformly in

the past four years. The four-year average for March, as noted above, was 164,309 tons a day, while the March average in the past two years was 167,000 tons a day, and that rate seems the more natural. It would represent 9 per cent increase over last month's production, and a 90 per cent engagement of capacity according to the institute's present capacity rating.

The four increases the Steel Corporation has had in unfilled obligations, October to January inclusive, lend substantial support to such an expectation. The four-month increase was 1,127,834 tons, while the same months a year ago had a much smaller increase.

A downward turn after March has occurred in each of the past four years, but it promises to be less extensive this year, if it comes. Apparently the automobile industry will reach its high operating rate later than usual, and freight car buying is coming somewhat later than it did last winter. It now seems likely that only a very indifferent performance in the second half will keep this year from exceeding the steel output of 1927.

Lower Accident Rate in Foundries

A GOOD gage of what is being accomplished in some metal-working industries in the reduction of accidents is found in the sliding down of workmen's compensation insurance rates. Lower rates, at least in some States, cut the overhead down to the extent that the premium is reduced, although the gain from reduction in the number of employees absent because of injuries cannot be measured in dollars and cents. The steel foundries of Ohio are a conspicuous example of an industry that has done much to eliminate accidents and cut the cost of workmen's compensation insurance. The State insurance rate in this branch of the foundry industry a few years ago was \$2.40 per \$100 of payroll. This was reduced in the last half of 1927 to 70 cents per \$100 of payroll. The State insurance rate for gray iron foundries in Ohio, formerly \$1.35 per \$100 of payroll, is now \$1.20. Accident hazards are generally regarded as greater in steel foundries

than in other branches of the foundry industry. Steel manufacturers have been especially forward in safety work, both in an educational way and in the installation of safety appliances, and this has been reflected to a large degree in the steel foundries.

While many gray iron foundries, particularly larger plants, have kept pace with the steel foundries in accident prevention work, there is the difference that many of the gray iron foundries are quite small and apparently have not given so much attention to accident prevention as have the larger plants. Because of this, foundry accidents in Ohio are more numerous in gray iron foundries, thus necessitating higher compensation rates than the steel foundries have to pay. At the same time the reduction in the insurance rate for gray iron foundries indicates that these, too, are making some progress in accident prevention.

The Recent Vogue of "Cover It Up"

A GENERATION ago the muckraker flourished, and "pitiless publicity" was the rule. Of more recent years, there has been a swing to the opposite extreme. Absolute silence is the best policy. If there is a disturbing situation existing—say nothing about it, maybe it will blow over. If there is a scandal, hush it up—people soon forget. It is a reversion to the Victorian style of "cover it up."

One plan is no better than the other. A particularly discouraging development of the gum-shoe policy is the increasing use of the legal dodge: "I decline to answer on the ground that it might tend to incriminate me," or "on advice of counsel, I refuse to answer," as well as the ability of important parties to pending court proceedings to discover pressing business in South America, or that their health requires a year in Florida, or an opportunity to consummate a life-long desire to spend their declining years among the capitals of Europe.

At times one suspects an organized conspiracy of silence. When any witness (or his lawyer) can judge whether or no his information reflects upon his character, and then hide behind a legal barrier, what is the function of court? More than once such a policy has resulted in gross obstruction of justice by concealing the criminal until too late to punish him.

In such circumstances it is heartening to read the recent letter of John D. Rockefeller, Jr., to Col. Robert W. Stewart, chairman of the board of directors of Standard Oil Co. of Indiana, wanted in Washington on the odiferous oil case, but happening to be in Havana, on his way to Mexico. The letter said: "No desire, however praiseworthy, to protect those who may have been guilty of wrong-doing justifies the withholding of any slightest fact that will help to clear up the situation."

It remains to be seen whether Mr. Rockefeller's personal influence will be sufficient to enlist the unreserved adherence of the Standard Oil Co. of Indiana to the cause of prompt justice. The fact that this plan will clear that company's name does not detract from the fundamental truth behind Mr. Rockefeller's sentiments. Neither does the enunciation of it by him add to the essential soundness of the policy of frankness and honesty. The

pronouncement is notable chiefly for the prominent attention it will draw to a principle of sound business ethics, obscured by much gum-shoeing tactics. It is worthy of repetition:

"No desire, however praiseworthy, to protect those who may have been guilty of wrong-doing justifies the withholding of any slightest fact that will help to clear up the situation."

Amending the Sherman Law

THERE has been less comment than might have been expected on the proposal of Secretary of Labor Davis that the Sherman Law be amended in favor of the coal industry, so that coal operators could go before the Federal Trade Commission or the Attorney-General to secure a permit to consolidate and form trade agreements. Mr. Davis advocated such modification of the anti-trust act at a meeting in Syria Mosque, Pittsburgh, Jan. 28, and presumably his remarks were given sufficient publicity to provoke response if there were genuine interest in the subject.

Perhaps, however, the public was so artless as to take it that such a procedure in favor of the coal industry would have no sequel; that since no other industry is in as poor shape as the coal industry no other would seek the pleasant relief that might thereupon be obtainable with adequate effort. Perhaps, indeed, and not improbably, Mr. Davis did not consider fully the consequences, believing that coal is in a unique position because a labor union of large membership is involved.

When the proposition is put forth by a member of the Cabinet we are entitled to weigh it carefully. Mr. Davis is quoted as having said that, while two years ago there were 260,000 miners too many, now there are 300,000 too many. One can hardly take it that he would expect the combinations he advocates would tend to increase the consumption of coal and bring about the employment of more men. Rather there would be provided more funds for the mechanization of mines. The benefit then would be largely to the coal operators, suffering at present from too much competition.

Where, then, would the line be drawn? The courts having decided long ago that the Sherman Law should be viewed in the light of reason, it is fair to take it that in any industry there should be a reasonable amount of competition and in none should there be an unreasonable amount. Few are the industries today in which the members do not feel that there is an unreasonable amount of competition.

One can hardly go so far in fancy as to believe that Congress would draw its Sherman Law amendment in form referring specifically to coal or that if it did so the courts would approve the act as constitutional. The amendment would have to be general in character, referring to the degree of competition from which relief could be sought. The interesting question then would be which other industry would first arrive in Washington. The copper producers, who have accomplished more of late than formerly in curbing their competitive spirit, would doubtless be prompt in seeking entrance into a broader field of effort in reducing their competition to reasonable proportions. The steel industry would well be entitled to seek relief.

Some very simple consolidations in steel have resulted in protracted investigations by the trade commission. One may even imagine that in course of time even the automobile industry would go to Washington.

At any rate it must be put on record that in one case at least there has been such competition as to move a Cabinet member to propose that the United States Government reduce its restrictions. If there are not other cases in the same category at present there may be in future, or the idea of how bad the competition should be before relief is justified may be modified so as to include other cases. Here is evidence that some progress is being made in our thinking on the Sherman Law.

Minimum Wage Laws Waning

MINIMUM wage legislation in the United States has lost much ground. Of the 16 jurisdictions, represented by 15 States and the District of Columbia, which have experimented with minimum wage laws for women, eight have had the legislation held unconstitutional, repealed or otherwise nullified through legal procedure, according to a survey made by the National Industrial Conference Board. In 1923 the United States Supreme Court declared minimum wage laws unconstitutional in relation to adult women, so far as their mandatory provisions were concerned.

The Conference Board points to Massachusetts as the only strictly industrial State having a minimum wage act, and this law is non-mandatory. The only penalty that the State wage board may impose is the publication of names of companies that ignore decrees recommending minimum rates for women and boys. As a consequence, the difficulties of administering the Massachusetts law have proved so great that after 12 years of operation wage decrees have been issued for only 21 occupations, in which not more than 87,000 out of an approximate total of 500,000 women wage earners in the State are employed. At the present time, says the report, the Massachusetts law is the only type of minimum wage legislation likely to be a factor in the future.

The board calls attention to the fact that mandatory minimum wage acts are operating in California, Oregon and Washington, but that they "are to be considered as enforceable only so long as there is no opposition serious enough to result in a court test, in view of the Supreme Court's repeated findings unfavorable to the mandatory type of law. Specific local conditions, such as the lack of competition from other States for the industries prevailing in these Pacific Coast States, are believed principally responsible for such absence of opposition to the law."

The Industrial Welfare Commission of California, which has jurisdiction over 130,000 women workers, recently published a report on the operation of the minimum wage law of that State. According to this survey, certain arguments that have been raised against minimum wage laws have been satisfactorily answered by California experience. Instead of the minimum wage becoming the maximum wage, more and more women workers are receiving above the minimum, now set at \$16 a week. Moreover, the number of women receiving considerably higher pay is increasing. For example, in

1919, with a minimum wage of \$10, only 446 women received more than \$30 a week. In 1925, under a \$16 minimum, the number had increased to 6084. The sub-standard workers have not suffered loss of employment, the commission finds, since the employer may apply for permits for such women and legitimate requests are granted. As for the contention that apprentices and unskilled workers would be dropped when they reached the minimum wage and their places taken by cheaper help, experience has proved, as it has elsewhere in industry, that men and women, following training, are soon absorbed in the ranks of skilled workers.

Whatever the experience has been on the Coast, the fact remains that in Massachusetts the minimum wage law has had little effect on what are generally thought of as the manufacturing industries, as distinguished from such establishments as laundries and bakeries. On the contrary, the wages of women in manufacturing industries have gone up with other wages, following economic laws. The aim of owners has not been to lower wages, but to increase volume of production per labor hour. This has been effected to an extent by better equipment and methods and, taking the average run of labor, perhaps still more by adoption of piece-work rates, which stimulate the efforts of the unwilling and the lazy. Under such conditions a minimum wage law is not needed.

Barometers of Industry

PIG iron production is still regarded in many quarters as the most reliable single business indicator we have. Its vogue appears to be on the wane, however, and efforts have been made to find a satisfactory substitute. Some statisticians have regarded steel ingot production as a more reliable gage than pig iron, partly because changing metallurgical factors have made pig iron less important in steel making and partly because of some substitution of other forms of metals for castings.

Electric power consumption is one of the new indicators. Its use in this way was discussed at a recent New York conference of economists and statisticians. The point was made that, over the period during which these figures have been available, the curve (when modified as suggested below) has been practically parallel with that of pig iron. Obviously such a measure will have to be handled with a great deal of caution. It has a large element of seasonal activity, hence the lighting load should be eliminated before attempting to use the figure. There is a rapid change under way in the electrification of industry. This must be evaluated if we are to depend on the indications of the electric power factor.

It was the consensus of opinion at the meeting referred to above, which was under the auspices of the National Industrial Conference Board, that a single indicator, whether it be one of those mentioned above, or in itself a composite of a number of items, is exceedingly helpful to industry as a gage of conditions. Sharp distinction was drawn between industrial activity on the one hand, which connotes volume only, and business conditions on the other, which involve also considerations of profits and general business welfare. It was gen-

erally agreed, however, that each line of business is subject to influences independent of the general situation and hence must have its own index, expressed or implied, as well as the general index, if courses are to be charted with satisfactory assurance.

The fact that the pig iron and steel production figures are available earlier than those of any

other index we now have, and with virtually 100 per cent of completeness in them, suggests that after all they, or one of them, should continue to be the first reliance of those attempting to pilot business. Representing raw materials, and entering virtually every industry in some degree, they carry a large element of prophecy, as their history has amply proved.

NEW STEEL ASSOCIATION

Merger of Sheet and Strip Organizations Approved—G. H. Charls to Be President

DEVELOPMENTS have come rapidly since the announcement in *THE IRON AGE* of Feb. 9 that a merging of the National Association of Sheet and Tin Plate Manufacturers, the Hot-Rolled Strip Steel Institute and the Cold-Rolled Strip Institute into a single organization was in the making. Meetings of the three associations were held in Pittsburgh last week and



E. THEODORE SPROULL



GEORGE H. CHARLS

reports of committees that had been appointed to investigate the proposal were presented and approved. Details of organization since have been getting the attention of the committees of the three organizations, which have delegated to G. H. Charls, commissioner of the Hot-Rolled Strip Steel Institute, and E. T. Sproull, head of the Cold-Rolled Strip Steel Institute, full authority to draw up the constitution and by-laws of the new association, which may be known as the National Association of Flat Rolled Steel Manufacturers.

It will take a little time to work out the various details in connection with the new organization, its purposes and the scope of its activities, but Mr. Charls says that in a general way it will be patterned after the National Association of Sheet and Tin Plate Manufacturers in the matter of statistics, costs and labor bureaus, in sales promotion, production and consumption investigations, and will undertake other legal activities that not only the manufacturers but the general public may walk in the light of accurate information.

"Any agreement, understanding, combination or arrangement or any form of concerted action to curtail production, increase prices, suppress competition or otherwise restrain trade or commerce or to monopolize or attempt to monopolize any part of the trade or commerce of the country," said Mr. Charls, "is expressly excluded from the purpose or object of the association and contrary to its purposes."

All developments to date have been tentative, but the plans as they have so far crystallized, mean an organization along the lines of any business corporation, with a president and other executives with definite responsibilities. Mr. Charls will be president and he will have to assist him two vice-presidents,

E. T. Sproull, who will continue his present work in connection with cold-rolled strip steel, and A. N. Flora, who has been vice-president in charge of sales of the Trumbull Steel Co., Warren, Ohio, who is to supervise the new organization's activities relating to sheets and hot-rolled strips. It is probable that Cleveland will be the location of the headquarters of the new association.

The men who are to be responsible for the direction of the new body have long been identified with the manufacture and sale of the products embraced in its activities. Mr. Charls was for many years associated with the American Rolling Mill Co. and subsequently was with the United Alloy Steel Corporation, of which he was president when it was merged with the Central Alloy Steel Co. into what is now the Central Alloy Steel Corporation. Mr. Sproull, who assumed the commissionership of the Cold-Rolled Strip Steel Institute last May, was previously for 20 years active in sales and executive capacities in the steel industry, having been with the American Sheet & Tin Plate Co. in Pittsburgh, and the Jones & Laughlin Steel Corporation before going with the Trumbull Steel Co., of which he was general manager of sales for several years; he was assistant to the president when he left that company to become general manager of sales of the Oliver Iron & Steel Corporation, Pittsburgh. Mr. Flora has been active in the affairs of the Trumbull Steel Co. and besides being vice-president in charge of sales gave much time to matters pertaining to labor and wage scales, in which he is regarded as an expert.

Otis Steel Co. to Add Three Open-Hearth Furnaces

Directors of the Otis Steel Co., Cleveland, have authorized the construction of building space and complete overhead equipment for three additional open-hearth furnaces at its Riverside plant. One furnace of 125-ton capacity will be built this year. This furnace and building extensions will involve an expenditure of approximately \$550,000. At present with five open-hearth furnaces the company's ingot capacity is insufficient to meet its requirements. President E. J. Kulas, in announcing the extensions, said that, with the increased steel-making capacity, important operating savings will result which should be reflected in earnings. This was demonstrated in January when the company was able to operate on an inventory of ingots, slabs and sheet bars accumulated in the dull period late last year. This, he stated, resulted in a marked gain in earnings and prompted the directors to decide to increase the steel-making capacity.

American Rolling Mill Co. Sells Natural Gas Rights in Kentucky

Financial interests in Cincinnati, Pittsburgh and New York identified with the Hope Engineering & Supply Co., a West Virginia corporation with plants at Mount Vernon, Ohio, and with the Inland Gas Corporation, which is engaged in producing and selling natural gas in eastern Kentucky, have purchased from the American Rolling Mill Co. the natural gas rights on Armco property near its continuous sheet mill at Ashland, Ky., and also on land which the American Rolling Mill Co. had leased for natural gas development. The consideration was \$3,000,000 cash.

Iron and Steel Markets

Steel Output at Sustained Rate

Slight Gain in Production of Heavy Finished Products Offset

by Lower Sheet Mill Operations—Large Awards of
Structural Steel—Hot-Rolled Strip Prices Advanced

STEEL production is approaching a state of equilibrium, and current market activity is limited mainly to specifying against past commitments.

A retarded rate of buying is not surprising in view of heavy purchases occasioned by an advancing market and the obvious advantage to consumers of taking full shipments against orders placed at lower prices. This development has raised the question whether buyers are not anticipating some of their second quarter needs in present specifications. The extent of such speculative activity, if there be any, cannot be measured at this time. Certainly no such motives will influence specifying against contracts for rails or releases against tonnages for specific work, such as railroad car construction or the fabrication of building and bridges.

Incidentally, much of the recent increase in mill bookings has been due to railroad purchases and construction activity. Moreover, producers making the heavier rolled products used in those avenues of consumption have experienced the sharpest gains in both bookings and output. The Steel Corporation, for example, has increased its operations to 90 per cent of capacity, as compared with 88 per cent a week ago. On the other hand, plants in the Youngstown district, a leading center of sheet production, have been forced to curtail output slightly.

Sheets are in marked contrast with the heavier rolled products. January production by independent sheet manufacturers was 99 per cent of capacity, while shipments were at the rate of only 78 per cent. The explanation for this excess in output seems to lie in lagging specifications, particularly from the automobile industry. Motor car production continues to gain, but more slowly than was anticipated. In fact, the gradual character of the increase is regarded as one of the best promises of sustained demand for steel.

Maintenance of a high rate of ingot production is assured for a month or more despite divergent situations in different finished products. The large volume of specifications against such products as bars, plates, shapes and rails is enough to make this result reasonably certain. And in a market still lacking in entirely uniform tendencies, it is well to note that at Chicago, where demand for heavier rolled products has been heavy, new business in plates, shapes and bars continues to balance output, leaving mill backlog undiminished in size. Production at Chicago remains at 92 per cent of capacity, while the average for Pittsburgh and nearby districts is between 75 and 80 per cent.

Part of the activity of Chicago mills is accounted for by construction work. In the Chicago district alone structural steel orders for the week exceed 50,000 tons, including 19,000 tons for a Chi-

cago civic opera building. The total for the country is close to 68,000 tons, making the week the second largest in point of tonnage so far this year. Other large awards were 11,000 tons for a bridge at Vicksburg, Miss., and 8000 tons for a viaduct in Milwaukee. Pending projects were enlarged by inquiries for upward of 29,000 tons. Two drainage improvement jobs in Los Angeles will take 6400 tons of reinforcing bars, and 4500 tons has been awarded for the Cleveland Union Terminals.

Railroad purchases include 15,000 tons of structural steel for bridges placed by the Santa Fe and 1000 steel hopper car bodies ordered by the Norfolk & Western. Except for the latter, the railroad equipment market is devoid of important awards or inquiries. The Canadian National Railways have divided nearly 30,000 tons of rails among Canadian and American mills, the latter getting 11,550 tons. The Wabash is inquiring for 4800 tons of tie plates.

The upward trend of steel prices this week extends to hot-rolled strips, on which a new price schedule for the remainder of this quarter, and for second quarter not only puts quotations \$1 to \$2 a ton higher, but establishes four groups of widths, each taking its own base price. Sheet manufacturers have announced the opening of books for second quarter at 2.90c., Pittsburgh, for black, 2.10c. for blue annealed, 3.75c. for galvanized and 4.15c. for automobile body sheets, Pittsburgh. Except on the latter, these were the prices announced last year for first quarter, but which did not become fully effective because of heavy sales at lower figures.

Pig iron business has been fairly brisk in some districts but almost stagnant in others, notably in Pittsburgh and the Valleys. Sales were 25,000 to 30,000 tons at Buffalo, 25,000 tons at Cleveland, 10,000 tons at New York and at Boston. At St. Louis there are inquiries for 10,000 tons. A radiator manufacturer has bought 30,000 tons for various plants for second quarter at slightly higher prices than ruled on its first quarter tonnage. A Delaware River cast iron pipe manufacturer bought 10,000 tons from the Everett, Mass., furnace. Pig iron shipments are unusually heavy at Chicago. The new base price of \$20 on eastern Pennsylvania iron has become established by small-lot sales, but in New England prices are again unsettled. In some other districts prices are firmer but no higher.

Both of THE IRON AGE composite prices have advanced. Higher prices on wire products have raised the finished steel composite to 2.364c., from 2.350c. last week. It is now at the highest point since mid-September. Pig iron has gone to \$17.75 from \$17.67 last week, because of an advance in eastern Pennsylvania foundry iron.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

Pig Iron, Per Gross Ton:	Feb. 14,	Feb. 7,	Jan. 17,	Feb. 15,
	1928	1928	1928	1927
No. 2 fdy., Philadelphia	\$20.76	\$20.26	\$20.26	\$21.76
No. 2, Valley furnace	17.25	17.25	17.25	18.50
No. 2, Southern, Cin'ti	19.69	19.69	19.69	21.69
No. 2, Birmingham	16.00	16.00	16.00	18.00
No. 2 foundry, Chicago*	18.50	18.50	18.50	20.00
Basic, del'd eastern Pa.	19.50	19.50	19.50	21.00
Basic, Valley furnace	17.00	17.00	17.00	18.00
Valley Bessemer, del. P'gh	19.26	19.26	19.26	20.76
Malleable, Chicago*	18.50	18.50	18.50	20.00
Malleable, Valley	17.25	17.25	17.25	18.50
Gray forge, Pittsburgh	18.51	18.51	18.51	19.76
L. S. charcoal, Chicago	27.04	27.04	27.04	27.04
Ferromanganese, furnace	100.00	100.00	100.00	100.00

Rails, Billets, Etc., Per Gross Ton:

O.-h. rails, heavy, at mill	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill	36.00	36.00	36.00	36.00
Bess. billets, Pittsburgh	33.00	33.00	33.00	33.00
O.-h. billets, Pittsburgh	33.00	33.00	33.00	33.00
O.-h. sheet bars, P'gh	34.00	34.00	34.00	34.00
Forging billets, P'gh	38.00	38.00	38.00	40.00
O.-h. billets, Phila	38.30	38.30	38.30	38.30
Wire rods, Pittsburgh	42.00	42.00	42.00	43.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh	1.85	1.85	1.80	1.90

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.12	2.12	2.12	2.12
Iron bars, Chicago	1.90	1.90	1.90	2.00
Steel bars, Pittsburgh	1.85	1.85	1.80	1.90
Steel bars, Chicago	1.95	1.95	1.90	2.00
Steel bars, New York	2.19	2.19	2.14	2.24
Tank plates, Pittsburgh	1.85	1.85	1.80	1.85
Tank plates, Chicago	1.95	1.95	1.90	2.00
Tank plates, New York	2.17 1/2	2.17 1/2	2.12 1/2	2.19
Beams, Pittsburgh	1.85	1.85	1.80	1.90
Beams, Chicago	1.95	1.95	1.90	2.00
Beams, New York	2.14 1/2	2.14 1/2	2.09 1/2	2.24
Steel hoops, Pittsburgh	2.20	2.20	2.20	2.20

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

Steel Mill Operations at 75 to 80 Per Cent But New Business is Light

PITTSBURGH, Feb. 14.—Steel consumers still are specifying very steadily against old orders but seemingly are meeting the great bulk of their requirements from these releases, since new business is of very moderate proportions. This is not an altogether unexpected situation, because prices have been advancing pretty steadily since the opening of the year and it was natural that buyers should take every step to defer as long as possible paying the higher prices, and this they are doing by taking full shipments against their older and lower-priced commitments.

Comparatively light new engagements do not appear to be diminishing steel works and rolling mill operations, except possibly in the Youngstown district, where in some lines output was speeded up to a greater extent than was called for by shipping instructions. With a reduction in backlog business, notably in sheets, there has been a halting in the upward tendency in production.

Pittsburgh and nearby districts are producing ingots at between 75 and 80 per cent of capacity, an even higher operation by the leading producer making the average closer to 80 than to 75 per cent. A good order book in the various steel products at the opening of the year has been further augmented by the business driven in by the price advances, and the maintenance of steel plant activities for the next 30 days is not entirely dependent upon new business. Taking out of their purchases by buyers will be sufficient.

Sheets, Nails and Wire, Per Lb. to Large Buyers:

	1928	1928	1928	1927
Sheets, black, No. 24, P'gh	2.90	2.90	2.80	2.80
Sheets, black, No. 24, Chicago dist. mill	3.00	3.00	3.00	2.90
Sheets, galv. No. 24, P'gh	3.65	3.65	3.65	3.70
Sheets, galv. No. 24, Chicago dist. mill	3.85	3.85	3.85	3.85
Sheets, blue, 9 & 10, P'gh	2.10	2.10	2.10	2.20
Wire nails, Pittsburgh	2.05	2.55	2.55	2.55
Wire nails, Chicago dist. mill	2.70	2.60	2.55	2.60
Plain wire, Pittsburgh	2.50	2.40	2.40	2.40
Plain wire, Chicago dist. mill	2.55	2.45	2.45	2.45
Barbed wire, galv., P'gh	3.35	3.25	3.25	3.25
Barbed wire, galv., Chicago dist. mill	3.40	3.25	3.25	3.30
Tin plate, 100 lb. box, P'gh	\$5.25	\$5.25	\$5.25	\$5.50

Old Material, Per Gross Ton:

Heavy melting steel, P'gh	\$15.00	\$15.00	\$15.00	\$16.00
Heavy melting steel, Phila.	13.50	13.50	13.50	14.50
Heavy melting steel, Ch'go	12.50	12.50	12.50	13.00
Carwheels, Chicago	14.00	14.00	14.00	15.00
Carwheels, Philadelphia	15.50	15.50	15.50	16.00
No. 1 cast, Pittsburgh	14.50	14.50	14.50	15.75
No. 1 cast, Philadelphia	16.00	16.00	16.00	17.00
No. 1 cast, Ch'go (net ton)	14.50	14.50	14.50	16.50
No. 1 RR. wrot, Phila.	15.00	15.25	15.25	17.00
No. 1 RR. wrot, Ch'go (net)	11.00	11.00	11.00	11.75

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt	\$2.75	\$2.60	\$2.75	\$3.50
Foundry coke, prompt	3.75	3.75	3.75	4.25

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	14.25	14.25	14.25	13.00
Electrolytic copper, refinery	13.87 1/2	13.87 1/2	13.87 1/2	12.75
Zinc, St. Louis	5.60	5.65	5.62 1/2	6.67 1/2
Zinc, New York	5.95	6.00	5.97 1/2	7.02 1/2
Lead, St. Louis	6.12 1/2	6.22 1/2	6.30	7.30
Lead, New York	6.35	6.50	6.50	7.40
Tin (Straits), New York	51.87 1/2	53.25	54.25	68.75
Antimony (Asiatic), N. Y.	11.00	11.00	11.00	14.50

The second quarter promises to be an interesting one in the steel market, for most of the price advances that have been announced over the past three or four weeks have been related to that period on account of the heavy obligations that existed for this quarter's production. There is not much disposition on the part of consumers to question the claim of manufacturers that they are entitled to prices that permit a fair return, but a more interesting phase that will be determined in the quarter beginning April 1 is whether consumers are not anticipating some of their needs for the next quarter in their current specifications. Steel ingot production rose rapidly in January and is holding well to the higher rate this month. Since very little urgency has been observed in the specifications, there naturally is some concern as to whether actual consumption of steel has increased as much as production.

Makers of hot-rolled strip steel in the past week have come out with definitely higher prices, the advance averaging \$2 per ton. Informally opening their books for second quarter business, sheet makers have reaffirmed the nominal first quarter prices of the common finishes and have advanced automobile body sheets \$3 per ton. The prices on the common finishes represent advances of from \$1 to as much as \$4 a ton over those at which much of the current shipments are invoiced.

The Pittsburgh and Valley pig iron market still is dull and markedly so by comparison with other markets. There is little activity in the scrap market, although one fair-sized sale of heavy melting steel at \$15 is noted. A temporary shortage of beehive oven furnace coke was created by some extra purchases by a Valley iron maker and a rise of 15c. per ton in the price does not promise to hold out the week.

Pig Iron.—This market continues to run behind others in point of activity and in developing strength in prices. The Westinghouse Electric & Mfg. Co. has put out an inquiry for its second quarter requirements of foundry iron, but does not name a specific tonnage. No other second quarter inquiries of importance are before producers and current demand still runs to small lots. Consumers are taking out iron on old orders very steadily, but the fact that so little second quarter demand yet has developed makes it apparent that the coverage given buyers in the latter part of last year was extensive. Pig iron producers still say there is no profit in present selling prices and would like to see them advance, but that is proving difficult in face of liberal stocks on furnace yards and the fact that demand is so limited. The Shenango Furnace Co., which recently blew in its No. 1 furnace, late last week put out its No. 3 furnace for relining.

Prices per gross ton, f.o.b. Valley furnace:

Basic	\$17.00
Bessemer	17.50
Gray forge	16.75
No. 2 foundry	17.25
No. 3 foundry	16.75
Malleable	\$17.25 to 17.50
Low phosphorus, copper free	27.00

Freight rate to the Pittsburgh or Cleveland district, \$1.75.

Bars, Plates and Shapes.—Buyers are specifying well on old orders carrying lower prices than now prevail, the movement of bars being particularly good, but evidently consumers are meeting the great bulk of their requirements from steel ordered late last year and in January, as strictly new buying is of moderate proportions. Prices on new business are firm at 1.85c., base Pittsburgh, on all three products, and there is still a suggestion that with the opening of books for second quarter a higher price will be sought. Structural steel lettings are light in this district, but fabricators now find inquiry to be running a little heavier in small projects than was true recently.

Rails and Track Supplies.—Steady movement of standard-section rails against 1928 contracts is reported, but as yet not much activity has developed in spikes and other track supplies. There is nothing new as to prices.

Sheets.—Several of the independent companies late last week announced the opening of books for second quarter at 2.90c., base Pittsburgh, for black sheets; 3.75c., base, for galvanized; 2.10c., base for narrow and 2.20c., base, for wide blue annealed sheets, and 4.15c., base, for automobile body sheets. These prices, which are a reaffirmation of the formal first quarter prices, have since been announced by the American Sheet & Tin Plate Co. There continues to be free, but hardly urgent, specifying on old orders, but new business is in moderate volume. The prices just announced are being applied on new business for the remainder of first quarter, as well as on second quarter contracts, by makers representing a large part of the country's capacity, but the competition for orders for early rolling still produces some shading.

Tin Plate.—New business is very light, since all of the important consumers are under contract for their

requirements for the first half of this year. Specifications on contracts are flowing in steadily enough to provide an average mill operation of approximately 80 per cent. In connection with the weakness of pig iron, tin plate makers say that it was largely discounted in the reduction made in tin plate prices last November.

Hot-Rolled Flats.—One large Pittsburgh district producer has announced the following price schedule, effective at once and applying on new business for shipment during the remainder of this quarter and on second quarter contracts: Widths under 3 in., 2.20c. to 2.40c., base Pittsburgh; 3 in. to but not including 6 in., 2.10c. to 2.20c., base; 6 in. to but not including 12 in., 1.90c. to 2c. The Chicago base prices are \$2 per ton over the Pittsburgh bases. On strips from 12 in. to 24 in. wide, 16-gage and heavier, prices are to be based on plates at 1.85c., base Pittsburgh, and blue annealed at 2.20c., base Pittsburgh. It is expected that other makers will adopt this price schedule. Specifications on old orders are good, but new business is light.

Ferroalloys.—Liberal shipping instructions against contracts for spiegeleisen are reported, but takings of ferromanganese still are moderate and there has been a slight letdown in ferrosilicon. New business does not amount to much. Prices are unchanged.

Semi-Finished Steel.—There continues to be a fairly heavy movement of billets, slabs and sheet bars in keeping with good operating rates of non-integrated makers of strips, sheets and tin plate, but open market activity is limited. Forging quality billets and blooms reflect in demand the upward trend of automobile production. The pipe market is not active enough to produce much specifying of skelp. Wire rods are moving well against contracts for this quarter, but new business amounts to little, since users generally are well covered. The present price of \$44, base Pittsburgh or Cleveland, is not being paid frequently or on much tonnage.

Wire Products.—Good movement is noted of these products against first quarter contracts, carrying lower prices than now are generally quoted, but it is a little early for much second quarter business and because of full coverage of buyers for this quarter, there are few new demands. There is no evidence that producers are going below \$2.65 per keg, base Pittsburgh, for nails and \$2.50 per 100 lb., base, on plain wire, but getting these prices on any considerable amount of tonnage necessarily waits on the spring movement into consumption and the incident reduction of jobbers' stocks. Stocks of nails in second hands are believed to be heavy enough to cause some slackness in second quarter ordering.

Tubular Goods.—Inquiry has reached some producers for approximately 400 miles of 20-in., 22-in. and 24-in. pipe for a gas line to run from Amarillo, Tex., to Kansas City, but the formal inquiry for the pipe for the gas line to run from Monroe, La., to St. Louis is yet to reach the mills, although it is understood that banking interests have expressed willingness to finance the project. While there continues to be a steady expansion in the demand for standard-weight pipe, there has

THE IRON AGE Composite Prices

Finished Steel

Feb. 14, 1928, 2.364c. a Lb.

One week ago.....	2.350c.
One month ago.....	2.314c.
One year ago.....	2.374c.
10-year pre-war average.....	1.689c.

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 86 per cent of the United States output of finished steel.

High	Low
1927 2.453c., Jan. 4: 2.293c., Oct. 25	
1926 2.453c., Jan. 5: 2.403c., May 18	
1925 2.560c., Jan. 6: 2.396c., Aug. 18	
1924 2.789c., Jan. 15: 2.460c., Oct. 14	
1923 2.824c., Apr. 24: 2.446c., Jan. 2	

Pig Iron

Feb. 14, 1928, \$17.75 a Gross Ton

One week ago.....	\$17.67
One month ago.....	17.67
One year ago.....	18.96
10-year pre-war average.....	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

High	Low
1927 \$19.71,	Jan. 4: \$17.54,
1926 21.54,	Jan. 5: 19.46,
1925 22.50,	Jan. 13: 18.96,
1924 22.88,	Feb. 26: 19.21,
1923 30.86,	Mar. 20: 20.77,

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills	1.85c.
F.o.b. Chicago	1.95c. to 2.05c.
Del'd Philadelphia	2.17c.
Del'd New York	2.19c.
Del'd Cleveland	2.04c.
F.o.b. Cleveland	1.85c.
F.o.b. Lackawanna	1.95c.
F.o.b. Birmingham	2.10c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

	Base Per Lb.
F.o.b. Pittsburgh mills	1.90c. to 1.95c.
F.o.b. Birmingham	2.05c. to 2.15c.

Rail Steel

	Base Per Lb.
F.o.b. mills east of Chicago district	1.75c.
F.o.b. Chicago Heights mill	1.80c.

Iron

	Base Per Lb.
Common iron, f.o.b. Chicago	1.90c.
Refined iron, f.o.b. P'gh mills	2.75c.
Common iron, del'd Philadelphia	2.12c.
Common iron, del'd New York	2.14c.

Tank Plates

Base Per Lb.

	Base Per Lb.
F.o.b. Pittsburgh mills	1.85c.
F.o.b. Chicago	1.95c. to 2.05c.
F.o.b. Birmingham	2.10c.
Del'd Cleveland	2.04c.
Del'd Philadelphia	2.10c.
F.o.b. Coatesville	2.00c.
F.o.b. Sparrows Point	2.00c.
F.o.b. Lackawanna	1.95c.
Del'd New York	2.17 1/2c.
C.i.f. Pacific ports	2.30c.

Structural Shapes

Base Per Lb.

	Base Per Lb.
F.o.b. Pittsburgh mills	1.85c.
F.o.b. Chicago	1.95c. to 2.05c.
F.o.b. Birmingham	2.10c.
Del'd Cleveland	2.04c.
Del'd Philadelphia	2.10c.
F.o.b. Lackawanna	1.95c.
F.o.b. Bethlehem	2.00c.
Del'd Cleveland	2.04c.
Del'd Philadelphia	2.13c.
Del'd New York	2.14 1/2c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

Base Per Lb.

	Base Per Lb.
All gages, 2 in. and narrower, P'gh.	2.10c. to 2.20c.
All gages, wider than 2 in., to 6 in., P'gh.	2.05c. to 2.10c.
*All gages, 6 in. and wider, P'gh.	1.85c. to 1.90c.
All gages, narrower than 6 in., Chicago,	2.20c. to 2.40c.
All gages, 6 in. and wider, Chicago,	2.00c. to 2.20c.

*Mills follow plate or sheet prices according to gage on wider than 14 in.

Cold-Finished Steel

Base Per Lb.

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills	2.20c. to 2.25c.
Bars, f.o.b. Chicago	2.20c. to 2.30c.
Bars, Cleveland	2.30c. to 2.35c.
Shafting, ground, f.o.b. mill	*2.45c. to 2.90c.
Strips, under 12 in., 1 up to 3 tons, P'gh,	3.00c. to 3.15c.
Strips, under 12 in., 1 up to 3 tons, Cleveland	3.00c. to 3.15c.
Strips, under 12 in., 1 up to 3 tons, del'd Chicago	3.30c. to 3.45c.
Strips, under 12 in., 1 up to 3 tons, Worcester	3.25c. to 3.40c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

Base Per Keg

	Base Per Keg
Wire nails	\$2.65
Galvanized nails	4.65
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails	2.65

Base Per 100 Lb.

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	\$2.50
Annealed fence wire	2.65
Spring wire	3.50
Gal'd wire, No. 9	3.10
Barbed wire, gal'd.	3.35
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., (wire) mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

F.o.b. Pittsburgh	\$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

Base Per Lb.

Nos. 9 and 10, f.o.b. Pittsburgh	2.10c. to 2.20c.
Nos. 9 and 10, f.o.b. Chicago dist. mill,	2.20c. to 2.30c.

Nos. 9 and 10, del'd Cleveland	2.29c.
Nos. 9 and 10, f.o.b. Birmingham	2.25c. to 2.30c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh	3.95c. to 4.05c.
No. 24, f.o.b. Pittsburgh, B grade	3.75c. to 3.85c.

Galvanized

No. 24, f.o.b. Pittsburgh	3.65c. to 3.75c.
No. 24, f.o.b. Chicago dist. mill	3.85c.

No. 24, del'd Cleveland	3.84c. to 3.94c.
No. 24, f.o.b. Birmingham	3.90c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.90c. to 3.00c.
No. 28, f.o.b. Chicago dist. mill	3.00c. to 3.10c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	4.15c.
Long Ternes	

No. 24, 8-lb. coating, f.o.b. mill	4.10c.
Standard cokes, f.o.b. P'gh district mills	\$5.25

Tin Plate

Per Base Box

Standard cokes, f.o.b. P'gh district mills	\$5.25
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.35

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating I.C. \$11.20	25-lb. coating I.C. \$16.70
15-lb. coating I.C. 14.00	30-lb. coating I.C. 17.75
20-lb. coating I.C. 15.30	40-lb. coating I.C. 19.85

Alloy Steel Bars

(F.o.b. Pittsburgh, Chicago or Ohio Mill)

S. A. E. Series Numbers

Base Per 100 Lb.

2100* (1/2% Nickel, 0.10% to 0.20% Carbon)	\$2.90 to \$3.00
2300 (3 1/2% Nickel)	4.00 to 4.10
2500 (5% Nickel)	5.00 to 5.25
3100 (Nickel Chromium)	3.00 to 3.10
3200 (Nickel Chromium)	4.75 to 5.00
3300 (Nickel Chromium)	6.75 to 7.00
3400 (Nickel Chromium)	6.00 to 6.25
5100 (Chromium Steel)	3.00 to 3.10
5200* (Chromium Steel)	7.00 to 7.50
6100 (Chrom. Vanad. bars)	4.00 to 4.15
6100 (Chrom. Vanad. spring steel)	3.50 to 3.75
9250 (Silicon Manganese spring steel)	3.00 to 3.15

Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.05 to 4.20

Chromium Molybdenum bars (0.80-1.10 Chrom., 0.25-0.40 Molyb.)	4.00 to 4.25
Chromium Molybdenum bars (0.50-0.70 Chrom., 0.15-0.25 Molyb.)	3.05 to 3.10

Chromium Molybdenum spring steel (1-1.25 Chrom., 0.30-0.50 Molybdenum)	4.50 to 4.75
Chromium Molybdenum bars (0.80-1.10 Chrom., 0.25-0.40 Molyb.)	3.05 to 3.10

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/2 in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specification, but numbered by manufacturers to conform to S. A. E. system.

Rails

Per Gross Ton

Standard, f.o.b. mill</

been no appreciable gain in the call for oil well pipe, except from California, where drilling is fairly active, and unless there is a decided change in the oil situation, pipe makers will have to place considerable dependence this year on line pipe business. Most of the oil well pipe going to California is seamless. In keeping with the upward tendency in steel prices in general, some talk is heard of a possible stiffening in pipe prices. This originates with jobbers, who, on account of uncertainty in prices, are said not to have made much money and they would welcome a step by manufacturers which would stabilize the market. On standard-weight pipe the makers are quoting the card discount plus 1, 5 and $2\frac{1}{2}$ per cent beyond on carloads, but since the latter part of last year that quotation has not been strictly observed.

Cold-Finished Steel Bars and Shafting.—Buyers still are specifying in good fashion against first quarter contracts, but it is early for second quarter business and not much new spot business is developing in view of the fact that consumers are well covered for this quarter. On new business makers want 2.30c., base Pittsburgh or Chicago, but current shipments are mostly priced at \$2 a ton less. Takings for parts for a low-priced motor car are moderate and some producers have not had orders for almost two weeks.

Cold-Rolled Strips.—Makers generally have opened books for second quarter business at 3.15c., base Pittsburgh or Cleveland, for lots of 1 up to 3 tons, or 2.90c. for lots of 3 tons or more. Current specifications on first quarter contracts, carrying prices \$3 per ton below the new quotations, are sufficient to provide an operation of approximately 85 per cent of capacity. On second quarter business, fender stock strips are quoted at 4.30c. for No. 20 gage and at 4.35c. for No. 22 gage.

Bolts, Nuts and Rivets.—Demand for bolts and nuts is steady but it imposes no strain upon productive capacity. Rivets are not showing much life. Prices of these products are firm.

Coke and Coal.—Spot beehive oven coke is quotable at \$2.75 per net ton at ovens, but the causes which led to this price, representing an advance of 15c. a ton, have disappeared and there is doubt that this price will hold to the end of the week. The putting in of a second furnace by a Valley pig iron producer occasioned the extra demands that shortened the supply over the latter part of last week, but this producer since has taken off a furnace and now needs no extra supplies. Foundry coke prices are the same as a week ago. The coal situation presents nothing new except in the effort of the miners' union to give life to a strike that practically has long ceased to exist. There is to be a Senatorial inquiry into the situation.

Old Material.—The market is stronger on machine shop turnings, which have sold at \$11.50, and also is higher on blast furnace material because of the fact that

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Hoops	4.00c. to 4.50c.
Black sheets (No. 24 gage), 25 or more bundles	3.65c.
Galvanized sheets (No. 24 gage), 25 or more bundles	4.50c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	3.10c.
Galvanized corrugated sheets (No. 28 gage), per square	\$4.39
Spikes, large	3.30c. to 3.40c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Track bolts, all sizes, per 100 count	62 1/2 per cent off list
Machine bolts, per 100 count	62 1/2 per cent off list
Carriage bolts, per 100 count	62 1/2 per cent off list
Nuts, all styles, per 100 count	62 1/2 per cent off list
Large rivets, base per 100 lb.	\$3.50
Wire, black soft annealed, base per 100 lb.	\$3.00 to 3.10
Wire, galvanized soft, base per 100 lb.	3.00 to 3.10
Common wire nails, per keg	3.00
Cement coated nails, per keg	3.05

Ohio melters are again taking shipments. Heavy melting steel has been sold for delivery at one point in the district at \$15. This grade still is quotable from \$14.75 to \$15.25, as dealers are paying the latter price on short orders at one destination and are getting supplies at \$14.75 for delivery on short sales at another. Compressed and bundled sheet scrap commands a little more money than recently. Other grades show no particular change, and the market as a whole does not show the activity it did in former years when there was as sharp an increase in steel works operations as there has been in the past six weeks.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Furnace Grades:

Heavy melting steel	\$14.75 to \$15.25
Scrap rails	14.25 to 14.75
Compressed sheet steel	14.25 to 14.75
Bundled sheets, sides and ends	13.25 to 13.75
Cast iron carwheels	14.00 to 14.50
Sheet bar crops, ordinary	15.00 to 15.50
Heavy breakable cast	13.00 to 13.50
No. 2 railroad wrought	14.75 to 15.25
Heavy steel axle turnings	13.00 to 13.50
Machine shop turnings	11.00 to 11.50

Acid Open-Hearth Furnace Grades:

Railroad knuckles and couplers	16.75 to 17.00
Railroad coil and leaf springs	16.75 to 17.00
Rolled steel wheels	16.75 to 17.00
Low phosphorus billet and bloom ends	18.50 to 19.00
Low phosphorus, mill plate	17.50 to 18.00
Low phosphorus, light grade	16.50 to 17.00
Low phosphorus sheet bar crops	17.50 to 18.00
Heavy steel axle turnings	13.00 to 13.50

Electric Furnace Grades:

Low phosphorus punchings	16.50 to 17.00
Heavy steel axle turnings	13.00 to 13.50

Blast Furnace Grades:

Short shoveling steel turnings	11.00 to 11.50
Short mixed borings and turnings	11.00 to 11.50
Cast iron borings	11.00 to 11.50
No. 2 busheling	10.00 to 10.25

Rolling Mill Grades:

Steel car axles	18.00 to 19.00
No. 1 railroad wrought	11.00 to 11.50
Sheet bar crops	17.00 to 17.50

Cupola Grades:

No. 1 cast	14.50 to 15.00
Rails 3 ft. and under	15.00 to 15.25

Malleable Grades:

Railroad	14.75 to 15.25
Industrial	14.25 to 14.75
Agricultural	13.75 to 14.25

Ironton Iron and Steel Companies May Be Merged

Eastern interests are reported to be conducting negotiations looking toward the consolidation of iron and steel companies in the Ironton, Ohio, district. Options have been obtained on the properties of the Marting Iron & Steel Co., the Belfont Steel & Wire Co., the Norton Iron Works Co., excluding the Norton blast furnace, and the Ashland Steel Co. If the options are exercised the companies will be taken over and operated under one management and by-product coke ovens will be erected on the river front near the Marting and Belfont furnaces.

It is said that the plan, if carried out, will result in cutting down considerably the cost of producing pig iron at Ironton and will enable that district to regain some of the merchant iron business it has lost in recent months.

Such consolidation would include the blast furnaces of the Marting and Belfont companies, the nail and wire mill of Belfont, the wire cloth plant of Norton and the Bessemer steel mill of the Ashland Steel Co. The Norton furnace would be retained by the present owners to supply hot metal to the open-hearth furnaces of the Ashland plant of the American Rolling Mill Co. This furnace is now being modernized by the addition of new equipment.

The Belfont furnace of the Belfont Steel & Wire Co. was blown out on Feb. 2.

Rates on brass ingots and on copper scrap and brass scrap in carloads, from Newark, N. J., to points in New England territory are not unreasonable, according to a recent decision by the Interstate Commerce Commission in dismissing complaints by the Federated Metals Corporation.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

Per Gross Ton

Rerolling, 4-in. and over.....	\$33.00
Rerolling, under 4-in. to and including 1½ in.	\$33.50 to 34.00
Forging, ordinary	38.00 to 39.00
Forging, guaranteed	43.00 to 44.00

Sheet Bars

Per Gross Ton

Open-hearth or Bessemer	\$34.00
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Slabs

Per Gross Ton

8 in. x 2 in. and larger.....	\$33.00
Smaller than 8 in. x 2 in.	34.00

Skelp

Per Lb.

Grooved	1.85c.
Sheared	1.85c.
Universal	1.85c.

Wire Rods

Per Gross Ton

*Common soft, base.....	\$42.00 to \$44.00
Screw stock	\$5.00 per ton over base
Carbon 0.20% to 0.40%	3.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is \$45. Cleveland mill base, \$42 to \$44.

Prices of Raw Material

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Per Gross Ton

Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore Per Unit

Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algeria.....	10.00c.
Iron ore, Swedish, average 66% iron, 9.25c. to 9.50c.	

Manganese ore, washed, 52% manganese, from the Caucasus.....	39c.
Manganese ore, Brazilian, African or Indian, basis 50%	38c. to 39c.

Tungsten ore, high grade, per unit, in 60% concentrates	\$10.25 to \$10.75
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Per Gross Ton

Chrome ore, 45 to 50% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard	\$22.00 to \$24.00
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Per Lb.

Molybdenum ore, 85% concentrates of MoS ₂ , delivered	50c. to 55c.
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Coke

Per Net Ton

Furnace, f.o.b. Connellsville prompt	\$2.75
Foundry, f.o.b. Connellsville prompt	3.75 to 4.50

Foundry, by-products, Ch'go ovens	9.00
Foundry, by-product, New Eng-land, del'd	11.50

Foundry, by-product, Newark or Jersey City, delivered	9.45 to 9.85
Foundry, Birmingham	5.00

Foundry, by-product, St. Louis	9.75
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Coal

Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines	\$1.40 to \$1.80
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Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Gas coal, ½-in., f.o.b. Pa. mines	2.00 to 2.10

Mine run gas coal, f.o.b. Pa. mines	1.75 to 1.90
Steam slack, f.o.b. W. Pa. mines	1.00 to 1.10

Gas slack, f.o.b. W. Pa. mines	1.10 to 1.20
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Ferromanganese

Per Gross Ton

Domestic, 80%, furnace or seab'd.....	\$100.00
Foreign, 80%, Atlantic or Gulf port, duty paid	100.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21%	\$31.00 to \$32.00
Domestic, 16 to 19%	29.00

Electric Ferrosilicon

Per Gross Ton Delivered

50%	\$83.50 to \$88.50
75%	130.00 to 140.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

10%	\$35.00
11%	37.00

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

6%	\$23.00
7%	24.00
8%	25.00
9%	26.00

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd

92c. to 95c.

Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads

11.00c.

Ferrovanadium, per lb. contained vanadium, f.o.b. furnace

\$3.15 to \$3.65

Ferrocortanitium, 15 to 18%, per net ton, f.o.b. furnace, in carloads

\$200.00

Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton

\$91.00

Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton

\$122.50

Fluxes and Refractories

Fluorspar

Per Net Ton

Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines

\$14.50 to \$15.00

No. 2 lump, Illinois and Kentucky mines

\$20.00

Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid

\$16.00

Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines

\$32.50

Fire Clay

Per 1000 f.o.b. Works

First Quality

Second Quality

Pennsylvania

\$43.00 to \$46.00

Maryland

35.00 to 38.00

New Jersey

50.00 to 65.00

Ohio

35.00 to 38.00

Kentucky

35.00 to 38.00

Missouri

35.00 to 38.00

Illinois

35.00 to 38.00

Ground fire clay, per ton

7.00

Silica Brick

Per 1000 f.o.b. Works

Pennsylvania

\$43.00

Chicago

52.00

Birmingham

50.00

Silica clay, per ton

\$8.50 to 10.00

Magnesite Brick

Per Net Ton

Standard sizes, f.o.b. Baltimore and Chester, Pa.

\$65.00

Grain magnesite, f.o.b. Baltimore and Chester, Pa.

40.00

Chrome Brick

Per Net Ton

Standard size

\$45.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

Per 100 Pieces

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago) Per Cent Off List

Machine bolts	70
Carriage bolts	70

Lag bolts	70
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Plow bolts, Nos. 1, 2, 3 and 7 heads	70
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Hot-pressed nuts, blank or tapped, square	7
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Chicago

Structural Steel Contracts 50,000 Tons— Ingot Output Steady at 92 Per Cent

CHICAGO, Feb. 14.—This is another heavy week in structural and bridge awards, the total reaching well up to 50,000 tons. Foremost among new contracts is 19,000 tons for the Chicago Civic Opera Building. The Santa Fe has awarded 15,000 tons of 1928 bridge work to the American Bridge Co., which will also furnish 11,000 tons for the main spans of a bridge across the Mississippi River.

The railroad equipment market can be gaged only by the size of specifications from car builders. The largest single inquiry in the Chicago market is for 500 cars. The trade believes that three or four large lots are still to come, but the railroads from which the inquiries are expected are marking time.

Specifications for finished steel products exceed production by a fair margin. Output holds steady at 92 per cent of ingot capacity. Wire mill engagement at 75 per cent clearly indicates the return of credit in farm communities. Orders for sheets have expanded and hot mills have been speeded at least 10 points in the week. The price structure in all steel commodities is more firmly established and Chicago producers are finding a wide field and less competition as natural territories become more clearly defined by freight differentials from producing points. New buying in plates, shapes and bars balances well with output so that steel mill order books are not diminished in size, notwithstanding heavy production.

Pig Iron.—Shipments of Northern foundry iron over the first half of February are a shade heavier than in the last two weeks in January, when local sellers shipped a larger tonnage of pig iron than in any like period since the fourth quarter of 1926. Shipping orders exceed output and producers are drawing heavily on stocks at the furnaces. The melt in malleable foundries is growing. While sales are not so heavy as last week, they are in good volume when it is considered that the first quarter is half over and second quarter buying would not normally get under way for several weeks. A user located north of Chicago is in the market for 2000 tons of foundry iron. Charcoal iron is moving in carloads at \$27.04, delivered.

Prices per gross ton at Chicago:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$18.50
N'th'n No. 1 fdy., sil. 2.25 to 2.75	19.00
Malleable, not over 2.25 sil.	18.50
High phosphorus	18.50
Lake Superior charcoal, averaging sil. 1.50	27.04
Southern No. 2 fdy. (all rail)	22.01
Southern No. 2 (barge and rail)	20.18
Low phosph., sil. 1 to 2 per cent, copper free	\$28.50 to 29.00
Silvery, sil. 8 per cent	29.79
Bessemer ferrosilicon, 14 to 15 per cent	46.79

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

Ferroalloys.—New buying in these commodities is dull. Prices for ferromanganese are steady at \$100, seaboard. Car lots of 19 to 21 per cent spiegeleisen bring \$32, Hazard, Pa. Release orders on ferrosilicon are in good volume.

Prices delivered Chicago: 80 per cent ferromanganese, \$107.56; 50 per cent ferrosilicon, \$83.50 to \$87.50; spiegeleisen, 19 to 21 per cent, \$38.76 to \$39.76.

Plates.—Deliveries on plates have advanced to a range of four to six weeks following heavy specifications from car builders and structural shops. Rolling schedules are well rounded out on universal mills, the more extended shipping dates applying particularly to that commodity. Considering the large capacity available there is an uncommonly good run of orders for wide sheared plates. Inquiry for tank plates now stands at 6000 tons, the increase over last week representing the requirements of several small users. Bids will go in this week on 2000 refrigerator cars for the Pacific Fruit Express. The Rock Island has come into

the market for eleven 72-ft. gas-electric cars in addition to the 36 passenger cars inquired for a week ago. Engineers for the Chicago & Eastern Illinois are considering changes in design on the freight equipment that railroad will buy and it may be a week or 10 days before orders are placed. Prices are firm at 1.95c. to 2.05c., Chicago, for delivery until April 1. Producers are noncommittal as to price policies for steel to be delivered in the second quarter.

Mill prices on plates per lb.: 1.95c. to 2.05c., base, Chicago.

Structural Material.—Of primary interest in the local market is the announcement that the McClintic-Marshall Co. will fabricate the 19,000 tons of structural steel required for the Chicago Civic Opera Building. This award, coupled with reports that two other building projects requiring a total of 30,000 tons of steel are near the closing point, makes this a most unusual week in structural business. Fabrication has been awarded at Milwaukee on 8000 tons required for the Sixteenth Street viaduct. Fresh among the large bridge requirements of the railroads is the announcement that the Missouri Pacific will take 4000 tons for a span at Little Rock, Ark. Deliveries on shapes now range from two weeks to six weeks and contracts recently placed indicate that shipments will soon be further extended. Fabricators are enjoying a substantial volume of business, but shops are not yet filled to the point where prices can be put above the levels of recent months.

Mill prices on plain material per lb.: 1.95c. to 2.05c., base, Chicago.

Rails and Track Supplies.—In new business this week is dull. Orders for standard section rails are small and bookings of track accessories were not over 6000 tons. Rail mills in the Chicago district are engaged at nearly full capacity. Track supply production stands close to the normal capacity of the trade supplied from mid-Western mills. Open weather of the past few weeks is favorable to track work and railroads are calling for rail deliveries in full accord with the shipping schedules arranged earlier in the year. Demand for light rails is dull.

Prices f.o.b. mill, per gross ton: Standard-section open-hearth and Bessemer rails, \$43; light rails, rolled from billets, \$36. *Per Lb.:* Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.25c.; angle bars, 2.75c.

Bars.—New buying in mild steel bars continues to run ahead of shipments, while current specifications are keeping pace with deliveries from mills. Shipping orders from cold drawn manufacturers indicate that that industry is operating close to capacity. Road machinery plants are busy and farm machinery makers are holding to full schedules. Specifications for iron bars are light and backlog are small. The situation is such that producers hesitate to ask higher prices and quotations remain at 1.90c., Chicago. One local producer of alloy steel bars is operating at capacity. Prices are firm. Demand for rail steel bars is swinging in line with that for other finished steel products. Specifications for the week exceed production by a comfortable margin for the first time since last fall. Deliveries are still prompt, but producers have been quick to take advantage of the easier arrangement of rolling schedules and they are not willing to give the "overnight" service which has been characteristic of this market for many months. Mill books have also grown, but not to the point where much consideration is being given to quotations above 1.80c., Chicago Heights mills, which is now the ruling price. Bed makers and barn equipment manufacturers are busy.

Mill prices per lb.: Soft steel bars, 1.95c. to 2.05c., base, Chicago; common bar iron, 1.90c., base, Chicago; rail steel bars, 1.80c., base, Chicago Heights mill.

Cast Iron Pipe.—So far as public lettings and open inquiry are concerned, this market is about as dull as at any time in the past year. The only business of size in the market is 2000 tons of pipe on which Detroit has taken figures. It is reported that French makers entered the low bid. Several American foundries quoted figures close to \$30, Birmingham. The freight rate from that point to Detroit is \$7.92. Several orders this week from contractors total a fair tonnage, and based on actual inquiry a substantial amount of business is looked for from public utility operators. Sellers still

talk of advances in prices, but nothing definite will be known until quotations made in Detroit are disclosed.

Prices per net ton, delivered Chicago: Water pipe, 6-in. and over, \$34.20 to \$36.20; 4-in., \$38.20 to \$40.20; Class A and gas pipe, \$4 extra.

Sheets.—Present prices on sheets will no doubt be reaffirmed for second quarter. Some producers already have opened books for that period. Chicago delivered prices are 3.05c. for black sheets, 3.90c. for galvanized and 2.25c. to 2.35c. for the blue annealed product. Indications given a week ago that users' requirements would expand are well borne out, and production, following greatly increased specifications, has been increased to 88 per cent of hot mill capacity. Rolling schedules are now more than a week in advance for the first time in several months. It is evident that stocks in the hands of users are low because the bulk of release orders specify delivery at the earliest convenience of mills. New sales in all grades of sheets are quiet. Competition in the Southwest is keen and prices quoted are below the general level of the market.

Base prices per lb., delivered from mill in Chicago: No. 24 black, 3.05c.; No. 24 galvanized, 3.90c.; No. 10 blue annealed, 2.25c. to 2.35c. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Billets.—Shipments of billets are in fair volume. Rerolling billets 4-in. and over are quoted at \$33 a gross ton.

Hot Rolled Strip.—Shipments of this commodity are steady, but new sales are in small volume. Prices still show the effects of keen competition.

Wire Rods.—Local producers are now quoting the one price of \$45, Chicago. This commodity is moderately active.

Reinforcing Bars.—Sales are light but shipments from warehouses have been comparatively large because of the open winter. Shop backlog continue to dwindle and output is only a shade above 40 per cent of capacity. There still remains a sizable tonnage of road reinforcement to be placed. Prices are steady at 2.30c. to 2.75c. for billet steel reinforcing bars out of warehouses and 1.80c. to 1.85c., Chicago Heights mills, for rail steel. Recent awards and new inquiries are shown on page 506.

Bolts, Nuts and Rivets.—Producers announce a revision in price schedules on small rivets. Carloads are being quoted at 70 per cent off list by some makers, while others are giving 70 and 10 per cent. Specifications for bolts and nuts are steady and a fair business in spot sales is reported.

Wire Products.—Demand for wire and wire products continues to expand and Chicago producers are now using close to 75 per cent of plant capacity. Less than a year ago it was variously estimated that 65 per cent of wire mill capacity represented the requirements of this country. Specifications from the manufacturing trade are in good volume and jobbers, finding turnover more rapid than had been anticipated, are forwarding liberal orders. Several sizable railroad purchases have been made and, judging from specifications already issued, the bulk of this tonnage will be taken out at an early date. The demand is diversified both as to source

and commodity, and it has left mill stocks in a well-balanced condition.

Coke.—Foundry consumers of by-product coke are more insistent on prompt delivery and shipments against first half contracts are heavy. Quotations on spot business are \$9, f.o.b. local ovens, and \$9.50, delivered in the Chicago switching district.

Old Material.—Mixed tendencies of a week ago are now more apparent in the Chicago scrap market. Users of the large tonnage grades give indication that they have placed orders for more scrap than they can conveniently handle, particularly at the rate at which sellers are anxious to ship. Some buyers have tightened inspections. Outcoming scrap is more than adequate to meet present shipping instructions. Dealer trading is less active and those sellers who have materials coming out on track are pressing sales, thus giving buyers the impression that prices may sag. As a general rule, dealers are paying \$12.75 for heavy melting steel, but \$13 has been paid when exacting inspection was in prospect. Cast iron borings and busheling are more plentiful. A purchaser has refused cast iron borings at \$10.75 a gross ton, delivered, and a buyer of steel angle bars has made an offer of 25c. below recent market quotations. The Rock Island is offering 9000 tons and the Wabash will sell 2000 tons.

Prices delivered consumers' yards, Chicago:

Per Gross Ton

Basic Open-Hearth Grades:

Heavy melting steel	.....	\$12.50 to \$13.00
Shoveling steel	.....	12.50 to 13.00
Frogs, switches and guards, cut apart, and miscellaneous rails	.....	14.25 to 14.75
Hydraulic compressed sheets	.....	11.00 to 11.50
Drop forge flashings	.....	9.75 to 10.25
Forged, cast and rolled steel car-wheels	.....	15.50 to 16.00
Railroad tires, charging box size	.....	16.25 to 16.75
Railroad leaf springs, cut apart	.....	16.25 to 16.75

Acid Open-Hearth Grades:

Steel couplers and knuckles	.....	14.50 to 15.00
Coll springs	.....	16.50 to 17.00

Electric Furnace Grades:

Axle turnings	.....	13.00 to 13.50
Low phosphorus punchings	.....	14.25 to 14.75
Low phosphorus plate, 12 in. and under	.....	13.50 to 14.00

Blast Furnace Grades:

Axle turnings	.....	10.75 to 11.25
Cast iron borings	.....	10.25 to 10.75
Short shoveling turnings	.....	10.25 to 10.75
Machine shop turnings	.....	7.50 to 8.00

Rolling Mill Grades:

Iron rails	.....	13.50 to 14.00
Rerolling rails	.....	15.00 to 15.50

Cupola Grades:

Steel rails less than 3 ft	.....	15.25 to 15.75
Angle bars, steel	.....	14.50 to 15.00
Cast iron carwheels	.....	14.00 to 14.50

Malleable Grades:

Railroad	.....	14.25 to 14.75
Agricultural	.....	12.50 to 13.00

Miscellaneous:

*Relaying rails, 56 to 60 lb	.....	23.00 to 25.00
*Relaying rails, 65 lb. and heavier	.....	26.00 to 31.00

Per Net Ton

Rolling Mill Grades:

Iron angle and splice bars	.....	14.00 to 14.50
Iron arch bars and transoms	.....	19.25 to 19.75
Iron car axles	.....	21.50 to 22.00
Steel car axles	.....	16.00 to 16.50
No. 1 railroad wrought	.....	11.00 to 11.50
No. 2 railroad wrought	.....	11.50 to 12.00
No. 1 busheling	.....	9.25 to 9.75
No. 2 busheling	.....	4.25 to 4.75
Locomotive tires, smooth	.....	12.50 to 13.00
Pipes and flues	.....	8.00 to 8.50

Cupola Grades:

No. 1 machinery cast	.....	14.50 to 15.00
No. 1 railroad cast	.....	13.50 to 14.00
No. 1 agricultural cast	.....	13.50 to 14.00
Stove plate	.....	11.25 to 11.75
Grate bars	.....	11.50 to 12.00
Brake shoes	.....	11.75 to 12.25

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

Warehouse Prices, f.o.b. Chicago

Base per Lb.

Plates and structural shapes	.....	3.10c.
Soft steel bars	.....	3.00c.
Reinforcing bars, billet steel	.....	2.35c. to 2.75c.
Cold-finished steel bars and shafting—		
Rounds and hexagons	.....	3.60c.
Flats and squares	.....	4.10c.
Bands	.....	3.65c.
Hoops	.....	4.15c.
Black sheets (No. 24)	.....	3.95c.
Galvanized sheets (No. 24)	.....	4.80c.
Blue annealed sheets (No. 10)	.....	3.50c.
Spikes, standard railroad	.....	3.55c.
Track bolts	.....	4.55c.
Rivets, structural	.....	3.60c.
Rivets, boiler	.....	3.60c.

Per Cent Off List

Machine bolts	.....	60
Carriage bolts	.....	60
Coach or lag screws	.....	60
Hot-pressed nuts, squares, tapped or blank	.....	60
Hot-pressed nuts, hexagons, tapped or blank	.....	60
No. 8 black annealed wire, per 100 lb.	.....	\$3.20
Common wire nails, base per kg.	.....	3.00
Cement coated nails, base per kg.	.....	2.90

To Tell of Sparrows Point Development

"Recent Developments at the Sparrows Point Plant of the Bethlehem Steel Co." is the title of a paper to be read March 3 before the Philadelphia district section of the Association of Iron and Steel Electrical Engineers. The author is F. O. Sehnure, electrical superintendent of the Sparrows Point plant. The meeting will be held at 7.30 p. m. at the Engineers' Club, 1317 Spruce Street. Plans are in the making for a visit on May 5 to the Conowingo, Md., hydroelectric plant.

New York

Pig Iron Sales of 10,000 Tons—Sheet Prices on Firmer Basis

NEW YORK, Feb. 14.—Pig iron sales by local brokers aggregated fully 10,000 tons for the week. This total is above the average, although only half as large as that for the previous week. The Washburn Wire Co., Phillipsdale, R. I., has closed against its inquiry for 5000 tons of basic iron. This tonnage, however, was not included among the sales of New York brokers. There is a good run of small-lot purchases, and indications of increasing melt are seen in repeat orders and in the hastening of shipments against contracts. More interest is being shown in second quarter requirements. The American Radiator Co., New York, has purchased about 30,000 tons, representing second quarter requirements of plants not regularly supplied by its subsidiary, the Tonawanda Iron Corporation. This company is still in the market for 2000 tons of foundry iron for second quarter delivery at Gloucester, N. J. Another second quarter inquiry from a melter in this district calls for 1500 tons. While current prices are slightly higher than those which ruled on much of the first quarter tonnage booked, the recent advance to \$20, base furnace, on eastern Pennsylvania foundry iron is still largely untested. Quotations on Buffalo foundry iron are not entirely free from irregularities, although concessions below \$17, base furnace, are less frequent than some weeks ago. Efforts of an idle furnace to liquidate remaining yard stocks, now estimated at 5000 tons, have proved a disturbing market factor.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75 to 2.25	\$21.41 to \$21.91
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	20.39 to 22.52
East. Pa. No. 2 fdy., sil. 2.25 to 2.75	20.89 to 23.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	21.39 to 23.52

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.

Ferroalloys.—Neither the agents of British producers, nor the importers of Norwegian and Canadian alloy report any new business. Specifications on contracts are moderate, and it is probable that a large number of consumers were well stocked with the alloy through purchases made at the end of the year. In spiegeleisen there has been a fair amount of carload business the past week or so. Prices of both alloys are unchanged.

Reinforcing Bars.—Tonnage placed thus far in February has been in considerably less volume than was the case in the preceding month, but local offices have been kept rather busy figuring work which will be placed in the early spring. On the small orders which have made up the bulk of the tonnage placed recently prices have been firm.

Finished Steel.—During the last week the volume of orders has been checked somewhat, and it seems that the buying movement which began early in the new year has reached a peak, temporarily at least. Yet there has been nothing to indicate the beginning of a recession, and the tendency toward firmer prices is still serving to supply the mills with heavy specifications on old contracts. Continued improvement in the volume of business in plates and shapes is being reflected in a firmer price structure, and the minimum prices of 2.14½c., at New York, for shapes and 2.17½c. for plates are representative of the market. Talk of further price advances is also bringing out negotiations for a number of projects which might have remained dormant until later in the year. Fabricated prices, however, are barely reflecting the increased cost of plain material, and fabricators seem more interested in securing backlog than in obtaining a better margin of profit. Several large jobs placed recently in New York have reflected this tendency. Awards of fabricated structural steel in the metropolitan territory during January, as reported to the Structural Steel Board of Trade, amounted to 30,000 tons, the figure not including bridges, subways, etc. This compares

with 36,900 tons in December and with 38,000 tons in January, 1927. Practically all the mills represented in this district have adopted the new sheet prices, namely 2.90c., Pittsburgh, for black, 3.75c. for galvanized, and 2.10c. to 2.20c. for blue annealed. A number of sales of carload lots and less have been made at these figures. An advance in hot-rolled strip has also been announced. While mills seem to be adhering to 2.65c., Pittsburgh, for nails and 2.50c. for plain wire, most consumers are fairly well covered for this quarter and there has been little opportunity to test these quotations.

Mill prices per lb., delivered New York: Soft steel bars, 2.19c.; plates, 2.17½c.; structural shapes, 2.14½c.; bar iron, 2.14c.

Warehouse Business.—Purchasing has been slightly larger than in the early part of last month. The wide range in black and galvanized sheet prices continues,

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.34c.
Soft steel bars and small shapes	3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.

Cold-finished shafting and screw stock—

Rounds and hexagons	3.40c.
Flats and squares	3.96c.
Cold-rolled strip, soft and quarter hard	5.15c. to 5.40c.
Hoops	4.49c.
Bands	3.99c.
Blue annealed sheets (No. 10 gage)	3.84c. to 3.89c.
Long terne sheets (No. 24)	5.80c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x 1½ in. and larger	3.30c.

Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
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Open-hearth spring steel, bases	4.50c. to 7.00c.
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Machine bolts, cut thread	Per Cent Off List
¾ x 6 in. and smaller	.55 to 60
1 x 30 in. and smaller	.50 to 50 and 10

Carriage bolts, cut thread	
½ x 6 in. and smaller	.55 to 60
¾ x 20 in. and smaller	.50 to 50 and 10

Coach screws	
½ x 6 in. and smaller	.55 to 60
1 x 16 in. and smaller	.50 to 50 and 10

Boiler Tubes	Per 100 Ft.
Lap welded steel, 2-in.	\$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

Discounts on Welded Pipe		
Standard Steel—	Black	Galv.
1½-in. butt	46	29
¾-in. butt	51	37
1-3 in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap	37	12

Wrought Iron—		
½-in. butt	5	+19
¾-in. butt	11	+9
1-1½-in. butt	14	+6
2-in. lap	5	+14
3-6-in. lap	11	+6
7-12-in. lap	3	+16

Tin Plate (14 x 20 in.)	Prime	Seconds
Coke, 100 lb. base box	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC	\$9.70	\$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 x 20 in.)	Prime	Seconds
IC—20-lb. coating	\$10.00 to \$11.00	
IC—30-lb. coating	12.00 to 13.00	
IC—40-lb. coating	13.75 to 14.25	

Sheets, Box Annealed—Black, C. R. One Pass	Per Lb.
Nos. 18 to 20	3.80c. to 4.00c.
No. 22	3.95c. to 4.15c.
No. 24	4.00c. to 4.20c.
No. 26	4.10c. to 4.30c.
No. 28*	4.25c. to 4.45c.
No. 30	4.50c. to 4.70c.

Sheets, Galvanized	Per Lb.
No. 14	4.35c.
No. 16	4.45c.
No. 18	4.35c. to 4.60c.
No. 20	4.50c. to 4.75c.
No. 22	4.55c. to 4.80c.
No. 24	4.70c. to 4.95c.
No. 26	4.95c. to 5.20c.
No. 28*	5.20c. to 5.45c.
No. 30	5.60c. to 5.85c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.	

jobbers in local New Jersey quoting on a basis of 4.20c. per lb. for black and 4.95c. per lb. for galvanized, while New York warehouses offer black sheets at 4c. per lb. base, and galvanized at 4.70c. per lb. Cold rolled strip steel prices have been revised, effective Feb. 12, to a range of 5.15c. to 5.40c. per lb.

Cast Iron Pipe.—There has been a little activity during the past week, with some purchases by private companies and a few scattered lettings of small tonnages by municipalities. A number of large projects are said to be under consideration for early spring negotiation. Prices are firmer with some suggestions of advances. Both Northern and Southern makers are adhering to the present quotation of \$28 per ton, Birmingham base.

Prices per net ton, delivered New York: Water pipe 6-in. and larger, \$37.25 to \$38.25; 4-in. and 5-in., \$42.25 to \$43.25; 3-in., \$52.25 to \$53.25; Class A and gas pipe, \$4 to \$5 extra.

Coke.—Slightly better foundry operations in this territory are giving some strength to the prices for foundry coke, but no improvement in spot demand is noted. The market for the furnace grade is very quiet. Standard foundry is quoted for prompt shipment at \$4 to \$4.50 per ton, Connellsville, and standard furnace at from \$2.75 to \$3 per ton, Connellsville. Delivered prices are: To northern New Jersey, \$8.03 to \$8.53; to New York or Brooklyn, \$8.79 to \$9.29; to Newark or Jersey City, \$7.91 to \$8.41. By-product coke continues at \$9 to \$9.40 per net ton, delivered Newark or Jersey City.

Old Material.—Consumers are less inclined to delay shipments of scrap, but there has been no buying of consequence, so that business is largely confined to filling old contracts. No. 1 heavy melting steel is being bought at \$13.50 per ton, delivered eastern Pennsylvania, and yard grade at \$10.50 to \$11 per ton, delivered. Most brokers are paying \$11 per ton, but in a few cases only \$10.50 is paid on shipments of yard steel to a Phoenixville, Pa., mill. A local foundry consumer of stove plate recently purchased a small tonnage at \$11 per ton, delivered, and brokers are offering \$8.50 per ton, New York, for foundry grade, with the offering price for steel mill grade \$8.75 per ton, New York. Representatives of German steel mills are still seeking to purchase heavy melting steel for export to Germany. A sale of about 15,000 tons for export to Europe is reported.

No. 1 heavy melting steel.....	\$10.00 to \$10.85
Heavy melting steel (yard).....	7.00 to 7.25
No. 1 heavy breakable cast.....	11.25 to 12.00
Stove plate (steel works).....	8.75 to 9.00
Locomotive grate bars.....	8.75 to 9.00
Machine shop turnings.....	6.75 to 7.50
Short shoveling turnings.....	7.00 to 7.50
Cast borings (blast furnace or steel works).....	6.75 to 7.50
Mixed borings and turnings.....	7.00 to 7.50
Steel car axles.....	16.00 to 16.50
Iron car axles.....	23.75 to 24.75
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	8.75
Forge fire.....	6.75 to 7.00
No. 1 railroad wrought.....	10.50 to 11.00
No. 1 yard wrought, long.....	9.00 to 9.50
Rails for rolling.....	10.50 to 11.00
Cast iron carwheels.....	11.25 to 11.75
Stove plate (foundry).....	8.50 to 9.00
Malleable cast (railroad).....	10.00 to 10.50
Cast borings (chemical).....	11.00 to 11.50
<i>Prices per gross ton, delivered local foundries:</i>	
No. 1 machinery cast.....	\$13.75 to \$14.25
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	11.75 to 12.25
No. 2 cast (radiators, cast boilers, etc.).....	11.25 to 11.75

Warehouse Prices, f.o.b. Cleveland

Base per Lb.

Plates and structural shapes.....	3.00c.
Soft steel bars.....	3.00c.
Reinforcing steel bars.....	2.25c. to 2.75c.
Cold-finished rounds and hexagons.....	3.65c.
Cold-finished flats and squares.....	4.15c.
Hoops and bands.....	3.65c.
Cold-finished strip.....	*5.95c.
Black sheets (No. 24).....	3.75c.
Galvanized sheets (No. 24).....	4.60c.
Blue annealed sheets (No. 10).....	3.25c.
No. 9 annealed wire, per 100 lb.....	\$2.90
No. 9 galvanized wire, per 100 lb.....	3.35
Common wire nails, base per keg.....	2.90

*Net base, including boxing and cutting to length.

Cleveland

Bars and Shapes in Good Demand—Hot-Rolled Strip Prices Advanced

CLEVELAND. Feb. 14.—Demand for steel bars and structural material in specifications against contracts continues fairly heavy. Consumers are taking out material at a rate that indicates that they will order about all the steel covered by first quarter contracts. Plates are not active but are moving better than a few weeks ago. Some car lot business is coming out in steel bars, plates and structural material at the new 1.85c. price, which is holding. New demand for sheets in this territory is rather slow, but the automotive industry is taking heavy shipments of sheets, strip steel and alloy steel.

Hot-rolled strip steel has been advanced \$1 to \$2 a ton and mills have opened their books for the second quarter at the advance. Some of the sheet mills have also opened their books for the second quarter at the present regular quotations. An increase in production schedules is planned by some of the automobile companies for next month. The bulk of the steel business in this territory is coming directly or indirectly from the automotive industry, but orders from this source are hardly up to expectations. Some of the parts makers have only a moderate amount of business. This is evidently due, partly at least, to the fact that the Ford Motor Co. is still operating at a very limited rate.

In the structural field, not only has inquiry improved, but the outlook for building work in this territory is more promising than for some time.

Pig Iron.—The market continues active, with sales of 25,000 tons in foundry and malleable grades by Cleveland interests during the week, which was somewhat less than during the previous week. While many foundries are buying for the second quarter, others are inclined to purchase only for their early needs, so that they can more closely balance purchases with their requirements. These see no incentive to cover far ahead as long as there are no indications of higher prices and they can secure good deliveries on current orders. The Lake furnace price is holding to \$17 in this territory, but producers are still absorbing freight by going to \$16.50 for shipment to some competitive points. In Michigan, where the price has strengthened recently, the market is now established at \$18. Shipments are running ahead of those in January, largely because of the liberal amount of iron that is being taken by the automotive industry. Shipping orders from radiator, heating furnace and stove manufacturers show a gain, but northern Ohio foundries are taking only moderate shipments.

Prices per gross ton at Cleveland:

N'th'n No. 2 fdy., sil. 1.75 to 2.25.....	\$18.50
Southern fdy., sil. 1.75 to 2.25.....	22.00
Malleable.....	18.50
Ohio silvery, 8 per cent.....	28.00
Basic, Valley furnace.....	17.00
Standard low phos., Valley furnace.....	26.50 to 27.00

Prices, except on basic and low phosphorus, are delivered Cleveland. Freight rates: 50c. from local furnaces; \$3 from Jackson, Ohio; \$6 from Birmingham.

Iron Ore.—Shipments of Lake Superior ore from Lake Erie ports are rather light, amounting to 320,432 tons in January as compared with 449,361 tons in the same month last year. Shipments for the season until Feb. 1 were 26,707,158 tons, as compared with 31,050,208 tons during the previous year. The dock balance is slightly less than that of a year ago, being 6,288,000 as of Feb. 1, compared with 6,692,124 tons on the same date a year ago.

Bolts, Nuts and Rivets.—Bolt and nut manufacturers are getting a fair volume of well distributed orders from jobbers, the automotive industry, railroads and other consumers. Recent price advances on steel bars, wire and wire rods have a tendency to make the tone of the market firmer. The industry is operating at approximately 60 per cent. The demand for rivets is not active.

Sheets.—Several of the mills have opened their books for the second quarter at the present regular

quotations of 2.90c., Pittsburgh, for black, 2.10c. for blue annealed, 3.75c. for galvanized and 4.15c. for auto body sheets. New business is rather light but specifications from the automotive industry in Michigan continue good and permit the mills to maintain heavy operations. Efforts to make a higher price basis effective have not yet succeeded on galvanized sheets, on which there is a shading of around \$3 a ton. The price on blue annealed sheets appears to be well maintained and black sheets are firm at 2.90c.

Strip Steel.—Makers of hot-rolled strip have issued new price schedules under which prices are from \$1 to \$2 a ton above those that have been prevailing. In the new schedules the dividing line between very narrow material and the next classification is 3-in. strip instead of 2-in., as at present. The new prices are 2.20c., Pittsburgh, for under 3 in. wide, 2.10c. for 3-in. to 6-in., inclusive, and 1.90c. for 6 to 12-in., inclusive. Strip over 12 in. wide will carry the blue annealed sheet or plate base, as at present. The new prices apply to hoops and bands, but cut hoop is unchanged at 2.30c. The new prices apply to desirable orders, and for small lots mills are asking \$4 a ton above the round lot price for 3 in. and narrower material and \$2 a ton on other widths. The new prices will apply on second quarter contracts, for which mills have opened their books. Cold-rolled strip is firm at 3.15c., base Cleveland, or 2.90c. for 3 tons and over, and mills have also opened their books for the second quarter for cold-rolled strip at the present price, and for fender stock at the recently advanced price of 4.30c., Cleveland.

Semi-Finished Steel.—There is some activity in forging billets in car lots. Sheet bar specifications are holding up well, but there is very little new business.

Nails and Wire.—A \$2.55 price on nails has not disappeared in some sections, but this is evidently quoted by some small makers and is not being met by the larger producers. Specifications are coming out in good volume.

Reinforcing Bars.—Awards include 750 tons for grade elimination work in Cleveland. Small-lot inquiry has improved. Rail steel bars are now generally quoted at 1.75c., mill.

Warehouse Business.—Sales show a slight gain over last month. Prices are firm. The recent advance in mill prices has not been followed by any change in warehouse prices except on galvanized sheets.

Coke.—Furnace coke is weak. Foundry grades are dull. Quotations are unchanged at \$8, Painesville, for by-product foundry coke, or \$9.01, delivered Cleveland, and \$3.75 to \$5.10, ovens, for Connellsville foundry coke and \$2.75 for heating coke.

Old Material.—The only activity reported is the purchase by a Cleveland consumer of 3000 to 5000 tons of blast furnace scrap at \$11. Scrap is being produced faster than it is being consumed and some of the mills have become badly congested with material, necessitating further restrictions. This is having a weakening effect on the market. Blast furnace scrap is being freely offered at \$10.50. Quotations on other grades are unchanged.

Prices per gross ton, delivered consumers' yards:

Basic Open-Hearth Grades

No. 1 heavy melting steel.....	\$13.75 to \$14.00
No. 2 heavy melting steel.....	13.25 to 13.50
Compressed sheet steel.....	12.75 to 13.00
Light bundled sheet stampings.....	11.50 to 11.75
Drop forge flashings.....	12.50 to 13.00
Machine shop turnings.....	9.00 to 9.25
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	13.50 to 14.00
No. 1 busheling.....	11.00 to 11.25
Pipes and flues.....	9.00 to 9.50
Steel axle turnings.....	12.50 to 13.00

Acid Open-Hearth Grades

Low phosphorus forging crops.....	16.50 to 17.00
Low phosphorus, billet, bloom and slab crops.....	17.00 to 17.50
Low phosphorus sheet bar crops.....	16.50 to 17.00
Low phosphorus plate scrap.....	16.00 to 16.50

Blast Furnace Grades

Cast iron borings.....	10.50
Mixed borings and short turnings.....	10.50
No. 2 busheling.....	10.50

Cupola Grades

No. 1 cast.....	16.50 to 17.00
Railroad grate bars.....	11.00 to 12.00
Stove plate.....	12.00 to 12.50

Rails under 3 ft..... 18.00 to 18.50

Miscellaneous

Railroad malleable.....	15.00 to 15.50
Rails for rolling.....	16.25 to 16.50

Philadelphia

Steel Specifications Slow—Tonnage of Heavy Melting Steel Bought

PHILADELPHIA, Feb. 14.—Purchasing of both pig iron and steel has been light, but prices are generally steady. Specifications against contracts on bars and shapes are reported to be coming through rather slowly, consumers' requirements evidently being somewhat smaller than had been expected earlier in the quarter. As a result, some carry over of present contracts into the next quarter would not be surprising, although heavier specifications may develop as spring activity begins.

Black and galvanized sheet prices are slightly firmer, but concessions are still reported on desirable business. Some shading of both strip steel and blue annealed sheets has appeared, but most makers are not inclined to meet the lower quotations.

Despite general quietness in pig iron, furnaces are evidently maintaining the new price basis of \$20. A Delaware River pipe maker is reported to have closed on a sizable tonnage with a New England furnace.

Pig Iron.—About the only inquiry of consequence for second quarter delivery is about 2000 tons of foundry iron for the Gloucester, N. J., plant of the American Radiator Co. A cast iron pipe maker on the Delaware River is understood to have closed on about 10,000 tons of foundry iron with a New England furnace. Current purchasing of foundry iron is limited to occasional orders for one or two carloads, but consumers with contracts are in most cases accepting shipments without delay. The new basis of \$20 per ton, furnace, seems to be fairly well established, although there have been no large tonnages bought since the price became effective.

Prices per gross ton at Philadelphia:

East. Pa. No. 2 plain, 1.75 to 2.25	\$20.76
sl.	21.26
East. Pa. No. 1X.....	21.76
Basic (delivered eastern Pa.)...	19.50 to 20.00
Gray forge.....	19.75 to 20.25
Malleable.....	21.00 to 21.50
Standard low phos. (f.o.b. New York State furnace).....	23.00 to 24.00
Copper bearing low phos. (f.o.b. furnace).....	23.50 to 24.00
Virginia No. 2 plain, 1.75 to 2.25	24.54 to 25.04
sl.	25.04 to 25.54

Prices, except as specified otherwise, are delivered Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

Bars.—Consumers are slower in providing mills with specifications on their contracts. The current quotation of 1.85c. per lb., base, Pittsburgh, is being maintained on new business.

Shapes.—There is evidently a fair volume of tonnage involved in projects for the immediate future, but fabricators are specifying moderately against contracts. On current business, mills are quoting 2c. per lb., Bethlehem; 1.97½c. per lb., Pottsville, or 2.12c. to 2.13c. per lb., delivered Philadelphia.

Warehouse Prices, f.o.b. Philadelphia

Base per Lb.

Plates, 1/4-in. and heavier.....	2.50c. to 2.60c.
Plates, 1/8-in.	2.80c. to 3.00c.
Structural shapes.....	2.40c. to 2.60c.
Soft steel bars, small shapes and iron bars (except bands).....	2.40c.
Round-edge iron.....	3.50c.
Round-edge steel, iron finished, 1 1/2 x 1 1/2 in.	3.50c.
Round-edge steel, planished.....	4.30c.
Reinforcing steel bars, square, twisted and deformed.....	2.50c. to 3.00c.
Cold-finished steel, rounds and hexagons	3.35c.
Cold-finished steel, squares and flats	3.85c.
Steel hoops	3.85c. to 4.15c.
Steel bands, No. 12 gage to 1/2-in., inclusive	3.60c. to 3.90c.
Spring steel	5.00c.
Black sheets (No. 24)	4.25c.
Galvanized sheets (No. 24)	5.10c.
Blue annealed sheets (No. 10)	3.15c.
Diamond pattern floor plates—	
1/4-in.	5.30c.
1/8-in.	5.50c.
Rails	3.20c.
Swedish iron bars	6.60c.

Plates.—Mills report a good volume of shipments against contracts, but new business is limited for the most part to small lots. Prices are being maintained at 2c. per lb., Coatesville, or 2.10c. per lb., delivered at Philadelphia.

Sheets.—On both black and galvanized sheets there is slightly less tendency to offer the concessions from the market price that were obtainable a few weeks ago. Some shading of 2.90c. per lb., Pittsburgh, on black and 3.75c. per lb., Pittsburgh, on galvanized, however, is still in evidence. Recently a seller of strip steel sheets is reported to have quoted lower than 2.10c. per lb., base, but most makers are not inclined to meet this lower quotation.

Ferromanganese.—Selling of lots of 100 tons or less continues and prices are unchanged at \$100 per ton, seaboard.

Warehouse Business.—Prices are unaltered, although the present volume of purchasing from stock is small. The recently adopted quantity differentials on steel bars and small shapes are evidently being maintained by jobbers.

Imports.—In the week ended Feb. 11, 353 gross tons of pig iron from the Netherlands was received at this port. Ore imports were confined to 600 tons of chrome ore from Cyprus. Other imports were 50 tons of steel bars from Belgium and 35 tons from France, 189 tons of structural shapes from Belgium and four tons of steel scrap from the United Kingdom.

Old Material.—A mill at Coatesville, Pa., has closed on 15,000 to 20,000 tons of No. 1 heavy melting steel in the past week. Except for this purchase the scrap market continues quiet. A Phoenixville consumer, evidently receiving a sufficient tonnage of stove plate at \$13 per ton on present contracts, is now offering \$12.50 per ton, delivered, and will pay \$11 per ton, delivered, for machine shop turnings. A Lebanon, Pa., user of specification pipe is temporarily delaying shipments on contracts.

Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel.....	\$13.50 to \$14.00
Scrap T rails.....	13.00 to 13.50
No. 2 heavy melting steel.....	11.00 to 11.50
No. 1 railroad wrought.....	15.00 to 15.50
Bundled sheets (for steel works).....	10.50 to 11.00
Machine shop turnings (for steel works).....	11.00
Heavy axle turnings (or equivalent).....	12.00 to 12.50
Cast boring (for steel works and rolling mill).....	11.00
Heavy breakable cast (for steel works).....	15.50 to 16.00
Railroad grate bars.....	13.00
Stove plate (for steel works).....	13.00
No. 1 low phosph., heavy, 0.04 per cent and under.....	18.00 to 18.50
Couplers and knuckles.....	16.00 to 16.50
Rolled steel wheels.....	15.50 to 16.00
No. 1 blast furnace scrap.....	10.00 to 10.50
Machine shop turnings (for rolling mill).....	11.00
Wrought iron and soft steel pipes and tubes (new specifications).....	13.00 to 13.50
Shafting.....	17.50 to 18.00
Steel axles.....	19.00 to 20.00
No. 1 forge fire.....	11.00 to 12.00
Steel rails for rolling.....	15.00 to 15.50
Cast iron carwheels.....	15.50 to 16.50
No. 1 cast.....	16.00 to 16.50
Cast borings (for chemical plant).....	14.50 to 15.00

Busbar Supports Designed for Flexibility in Arrangement

A new line of busbar supports, known as the modified hollow square type, is being offered by the Westinghouse Electric & Mfg. Co. The supports consist of heat-treated aluminum alloy clamps which are insulated from the standard 1 1/4 in. pipe of the mounting support by means of high-grade micarta tubes. The bus support is designed for 4 in. x 1/4-in. busbars and for a maximum of 4000 volts. It may be adjusted to carry one or 12 bars. This feature allows the bus to be tapered as feeders are tapped off, or allows the easy installation of additional bus copper to provide for an increasing load. The hollow square arrangement of bars minimizes the influence of both skin effect and proximity effect, and will allow the copper to be used at its maximum efficiency. These supports are particularly adapted to heavy low-voltage bus construction.

Canadian Imports and Exports of Iron and Steel for 1927

TORONTO, ONT., Feb. 14.—Figures on Canada's imports and exports of iron and steel for 1927 are announced as follows:

Iron and Steel Imports into Canada		
	1927	1926
Iron ore	\$2,875,624	\$2,853,549
Pigs, ingots, etc.....	1,889,729	1,569,929
Rolling mill products.....	44,112,343	47,710,207
Tubes, pipes and fittings.....	3,727,361	3,834,837
Wire	3,334,551	3,129,673
Engines and boilers.....	16,920,299	13,907,730
Machinery	46,237,754	38,683,540
Tools	2,489,459	2,336,648

Iron and Steel Exports from Canada		
	1927	1926
Iron (total)	\$67,831,274	\$75,602,162
Pigs, ingots, etc.....	2,868,356	1,569,390
Scrap	782,407	646,644
Rolled products	1,929,139	2,685,979
Bars and rods.....	657,880	1,004,810
Rails	963,383	516,983
Machinery	5,591,523	4,151,443

Iron and Steel Production of Saar Increases Above Pre-War

WASHINGTON, Feb. 14.—Production of pig iron in the Saar in 1927 aggregated approximately 1,780,000 metric tons, against 1,638,051 tons in 1926 and 1,374,514 tons in 1913. The output of crude steel last year was 1,900,000 tons, compared with 1,734,161 tons in 1926 and 1,718,540 tons in 1913, according to the Iron and Steel Division, Department of Commerce. The Saar industries are members of the Continental Steel Entente and also are affiliated with a number of compo-tors. The report says that the several plants have made every effort to modernize and develop their installations.

James A. Farrell and M. C. Taylor Inspect Alabama Plant

BIRMINGHAM, Feb. 14.—James A. Farrell, president and chief executive officer, and Myron C. Taylor, chairman of the finance committee, of the United States Steel Corporation, arrived in Birmingham on Feb. 8, inspected properties of the Tennessee Coal, Iron & Railroad Co., and departed on Feb. 10. The visit of these two officials brought out a number of reports relative to proposed new developments, one specifying a new tube mill. At the office of the Tennessee company it was stated that these reports were without foundation at this time.

Louvain Memorial to Be Dedicated By Engineers This Year

The Louvain Library, destroyed by the Germans during the World War, and restored by American benefactors, will be dedicated on July 4 of this year, according to present plans, says a statement by the Engineering Foundation, 29 West Thirty-ninth Street, New York. The Belgian ambassador and Whitney Warren of New York, the architect, have both assented to this date, the foundation announced, and the sanction of the Louvain authorities is expected.

The foundation is arranging for the presence of a delegation of American engineers at the dedicatory ceremonies. Under the auspices of the foundation, a clock and carillon will be placed in the tower of the new library building at a cost of \$80,000, to be subscribed by members of the engineering profession in this country. Up to Jan. 25, \$32,300 had been contributed by 1880 engineers. The clock and carillon, the gift of 56,000 American engineers, will be installed "in memory of the engineers of the United States of America who gave their lives in the service of their country and its allies in the Great War, 1914-1918." Dr. Edward Dean Adams will head the United States engineering contingent at Louvain.

Boston

Pig Iron Prices Unsettled Again—Sales Totaled About 10,000 Tons

BOSTON, Feb. 14.—The show of firmness in pig iron from furnaces in Buffalo and east of Buffalo has not been maintained. Buffalo steel mills, out of the pig iron market a week or 10 days ago, have re-entered and taken No. 2X tonnages at \$16.50 a ton base, furnace, and No. 1X at \$17. Not all Buffalo stacks have met these prices, but furnaces east of Buffalo are competing. Current buying is for first and second quarter, mostly for deliveries straddling these periods. Sales the past week approximated 10,000 tons, and included 1000 tons No. 2 plain and No. 2X split three ways, stacks east of Buffalo taking 700 tons. Another sale was 2000 tons of No. 2X and No. 1X, divided between Buffalo and other Eastern furnaces, and still another was 1000 tons of two grades. Smaller sales ranged from 500 tons down to car lots, with eastern and western Pennsylvania, Virginia and Alabama irons cutting very little figure.

Prices of foundry iron per gross ton; delivered to most New England points:

Buffalo, sil. 1.75 to 2.25.....	\$21.41 to \$21.91
Buffalo, sil. 2.25 to 2.75.....	21.41 to 22.41
East. Penn., sil. 1.75 to 2.25.....	23.15 to 23.65
East. Penn., sil. 2.25 to 2.75.....	23.65 to 24.15
Virginia, sil. 1.75 to 2.25.....	25.71
Virginia, sil. 2.25 to 2.75.....	26.21
Alabama, sil. 1.75 to 2.25.....	22.91 to 24.77
Alabama, sil. 2.25 to 2.75.....	23.41 to 25.27

Freight rates: \$4.91 from Buffalo, \$3.65 from eastern Pennsylvania, \$5.21 all rail from Virginia, \$6.91 to \$8.77 from Alabama.

Cold-Rolled Strip.—Cold-rolled strip steel continues in good demand, but buying is of a hand-to-mouth character. Competition from Middle Western mills has practically disappeared, but it is keen among Atlantic seaboard mills. The Worcester, Mass., mill is holding to 3.30c. per lb. base, on lots of 1 to 3 tons and at 3.05c. on larger lots.

Sand.—Because of the comparatively low melt of iron in New England this winter, indications are that the spring molding sand buying movement will be slow in getting under way. Sand is \$2.75 a ton, that price having been in effect since December, last, when it was \$2. A meeting will shortly be held in New York in the interest of lower freight rates on sand.

Bars.—Mill representatives report some forward buying of steel bars, but most of the business placed so far this year has been for immediate consumption. Current prices are 1.85c. to 1.90c. per lb., base Pittsburgh. Reinforcing bars from stock, are 2.70c. to 2.75c.

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates	3.365c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Soft steel bars and small shapes	3.265c.
Plats, hot-rolled.....	4.15c.
Reinforcing bars.....	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, squares and flats.....	7.10c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hexagons.....	*3.45c. to 5.45c.
Squares and flats.....	*3.95c. to 6.95c.
Toe calk steel.....	6.00c.
Rivets, structural or boiler.....	4.50c.
Per Cent Off List	
Machine bolts	50 and 5
Carriage bolts.....	50 and 5
Lag screws	50 and 5
Hot-pressed nuts	50 and 5
Cold-punched nuts	50 and 5
Stove bolts	70 and 10

*Including quantity differentials.

per lb. base, mostly 2.70c. For mill shipment, 1.90c. per lb., base, Pittsburgh, is the prevailing price, or 2.26½c. delivered in New England.

Warehouse Business.—Warehouse prices on cold-finished steel bars have been advanced 10c. per 100 lb. to 3.45c. per lb. base, for rounds and hexagons. Quantity differentials have been changed.

Coke.—Business in by-product foundry coke is not improved. Foundry coke remains at \$11.50 a ton, delivered within a \$3.10 freight rate zone. Business in domestic fuel is holding up well, but little impression has been made on stock piles at ovens. The general asking price is \$8.50 a ton on cars Everett, Mass., but concessions have been given on specified sizes.

Old Material.—Unfavorable weather and continued low prices have combined to curtail the movement of old material in the past week. Most producers of scrap are willing to sell only when stocks become burdensome. This is especially true of heavy melting steel. Pennsylvania steel mills are drawing lightly upon New England scrap dealers, and the foundry melt does not permit expansion in textile and machinery cast sales. Prices remain unchanged.

Buying prices per gross ton f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$9.00 to \$9.25
Scrap rails	8.50 to 8.75
No. 1 railroad wrought	10.50 to 11.00
No. 1 yard wrought	9.50 to 10.00
Machine shop turnings	6.00 to 6.25
Cast iron borings (steel works and rolling mill)	6.00 to 6.25
Bundled skeleton, long	6.50 to 7.00
Forge flashings	7.00 to 7.25
Blast furnace borings and turnings	6.00 to 6.25
Forge scrap	6.00 to 7.00
Shafting	13.00 to 13.50
Steel car axles	15.50 to 16.00
Wrought pipe (1 in. in diameter, over 2 ft. long)	8.00 to 8.50
Rails for rolling	10.00 to 10.50
Cast iron borings, chemical	9.50 to 10.00

Prices per gross ton delivered consumers' yards:

Textile cast	\$14.00 to \$14.50
No. 1 machinery cast	14.50 to 15.00
No. 2 machinery cast	12.50 to 13.00
Stove plate	11.00
Railroad malleable	13.00 to 13.50

St. Louis

Pig Iron Inquiries for 10,000 Tons—Wabash to Buy 4800 Tons of Tie Plates

ST. LOUIS, Feb. 14.—Sales of pig iron during the last week totaled about 3000 tons—2500 tons by the Granite City maker and 250 tons by a leading Southern interest, but inquiries exceed 10,000 tons. The melt is increasing and prices are firmer. Stove foundries are operating five days a week, and the jobbing foundries report an increased melt. The principal inquiry is for 4000 tons for a radiator manufacturer. A railroad car

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes	3.25c.
Bars, soft steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
Black sheets (No. 24)	4.45c.
Galvanized sheets (No. 24)	5.25c.
Blue annealed sheets (No. 10)	3.60c.
Black corrugated sheets (No. 24)	4.50c.
Galvanized corrugated sheets	5.30c.
Structural rivets	3.75c.
Boiler rivets	3.75c.
Per Cent Off List	
Tank rivets, $\frac{1}{16}$ -in. and smaller, 100 lb. or more	70
Less than 100 lb.	65
Machine bolts	60
Carriage bolts	60
Lag screws	60
Hot-pressed nuts, square, blank or tapped, 200 lb. or more	60
Less than 200 lb.	50
Hot-pressed nuts, hexagons, blank or tapped, 200 lb. or more	60
Less than 200 lb.	50

builder wants 1000 tons, and local and nearby melters are inquiring for 5000 tons in scattered lots.

Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25 f.o.b.	
Granite City, Ill.	\$19.50 to \$20.00
Northern No. 2 fdy., delivered	
St. Louis	20.66
Southern No. 2 fdy., delivered	20.42
Northern malleable, delivered	20.66
Northern basic, delivered	20.66

Freight rates: 81c. from Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

Coke.—Movement of domestic grades is fair because of cold weather, but buying is less than production and stock piles are increasing at by-product ovens. Industrial grades are moving freely.

Finished Iron and Steel.—The principal inquiry before the market is for 4800 tons of tie plates for the Wabash Railroad. Buying of plates, shapes, bars and sheets is showing improvement, and prices are said to be holding well on all of these items. Warehouse business continues light in the territory as a whole, but is more active in the city of St. Louis. Structural fabricators report a quiet week.

Old Material.—Active items in the old material list showed a decline of 25c. a ton, and the market is still suffering from the effects of heavier shipments to this district than can be assimilated by its industries, although they are very busy. Railroad lists include: Rock Island, 10,000 tons; Chesapeake & Ohio, 7929 tons; Wabash, 1870 tons; Ann Arbor, 70 tons; Great Northern, 46 carloads; Nickel Plate, 24 carloads; Chicago, Milwaukee & St. Paul, 21 carloads; Kansas City, Mexico & Orient, 3 carloads; Standard Oil of Indiana, 3 carloads.

Prices per gross ton f.o.b. dealers' yards and delivered St. Louis district consumers' works:

Heavy melting steel	\$11.75 to \$12.25
No. 1 locomotive tires	12.75 to 13.25
Heavy shoveling steel	11.75 to 12.25
Miscellaneous standard-section rails, including frogs, switches and guards, cut apart	14.00 to 14.50
Railroad springs	14.50 to 15.00
Bundled sheets	8.75 to 9.25
No. 2 railroad wrought	11.75 to 12.25
No. 1 busheling	10.25 to 10.75
Cast iron borings	9.25 to 9.75
Iron rails	13.50 to 14.00
Rails for rolling	14.25 to 14.75
Machine shop turnings	7.75 to 8.25
Steel car axles	20.00 to 20.50
Iron car axles	24.00 to 24.50
Wrought iron bars and transoms	21.00 to 21.50
No. 1 railroad wrought	10.25 to 10.75
Steel rails, less than 3 ft.	15.75 to 16.25
Steel angle bars	13.00 to 13.50
Cast iron carwheels	14.25 to 14.75
No. 1 machinery cast	14.50 to 15.00
Railroad malleable	12.00 to 12.50
No. 1 railroad cast	13.50 to 14.00
Stove plate	13.75 to 14.25
Agricultural malleable	12.00 to 12.50
Relaying rails, 60 lb. and under	20.50 to 23.50
Relaying rails, 70 lb. and over	26.50 to 29.00

Youngstown

Valley Steel Producers Averaging Slightly Under 75 Per Cent Operation

YOUNGSTOWN, Feb. 14.—Total specifications, orders and shipments of leading local steel makers for the first half of this month are approximately the same as in the same period last month. January, however, was a month of heavy shipments because of the large December specifications. The increase in plant operations to take care of the enlarged January movement seems to have been sufficient to supply all demands that have developed since the opening of the year. Instead of a further increase in the output of steel, some companies have found it necessary to ease down a little to escape getting ahead of their order books. Taking in the Steel Corporation units in the Mahoning and Shenango Valleys, which as in other districts appear to be doing better than independent company plants, the district is producing ingots at an average somewhat under 75 per cent of capacity, but that rate is above performance of some of the independent companies.

While some gain is noted in the demand for butt-weld pipe, there has been no improvement in the call for drill and drive pipe and casing and orders for line

pipe appear to have been materially reduced. Heavy shipments of nails in January and of other wire products, following the recent advance in prices, have been succeeded by something of a lull in new business in these items. The district appears to have produced sheets a little more rapidly than they were being specified and there has been a moderate letdown in mill operations to bring about balance between output and demand. The report about steel bar business is uniformly favorable and there is practically full operation of the bar mills in this area.

An increase in the movement of sheet bars is noted. In pig iron there is lifelessness in marked contrast with the activity reported from other producing centers. Steel makers here are not buying much scrap and their takings of ferroalloys and other raw materials have been lighter this month than last.

The bright feature of the situation is that prices are showing firmness. Manufacturers do not expect to be obliged to take any business in bars for second quarter shipment at less than today's price of 1.85c., base Pittsburgh, and there are predictions that the price for that period will be 1.90c. Sheet makers feel that 2.90c., base Pittsburgh, for black sheets on second quarter business is as low as they should go, while for galvanized 3.75c., base, and for blue annealed 2.10c., base, on sizes up to 40 in. wide, with 2.20c. for sheets wider than 40 in. are uniformly the second quarter ideas of producers.

Buffalo

Pig Iron Sales Exceed 25,000 Tons—Steel Business Improves

BUFFALO, Feb. 14.—Pig iron prices are firmer and sales over the past week or 10 days have probably reached 25,000 to 30,000 tons. The Massey-Harris Harvester Co. has closed for at least part of its inquiry for 2000 to 4000 tons of foundry and malleable. A 1000-ton malleable lot was closed, as well as two lots totaling 1500 tons of foundry. A Pennsylvania consumer placed 1000 tons of foundry and another inquiry from Pennsylvania was for 1000 tons of foundry. The American Tube & Stamping Co., Bridgeport, Conn., is said to have placed 3000 to 5000 tons of basic. A current inquiry is for 1500 tons of malleable and included in prospective business are a dozen lots ranging from 200 to 500 tons of foundry and malleable. Producers hear that the melt is increasing considerably and there is talk of higher prices on pig iron. Prices quoted are firmer.

Prices per gross ton, f.o.b. furnace:

No. 2 plain fdy., sil. 1.75 to 2.25	\$17.00
No. 2X foundry, sil. 2.25 to 2.75	17.50
No. 1X foundry, sil. 2.75 to 3.25	18.50
Malleable, sil. up to 2.25	\$17.00 to 17.50
Basic	16.50 to 17.00
Lake Superior charcoal	27.28

Finished Iron and Steel.—Business continues to improve and prices are firm. Bar and shape mill operation is around 85 per cent. The 1.95c. Buffalo price is steady. Sheet mill operation is 85 per cent and prices are firm at 2.90c. for black; 3.75c. for galvanized, and 4.15c. for automobile body sheets. Price cutting has disappeared. Most of the sheet business is for prompt shipment, with a steady demand from the automobile industry. Specifications for bolts and nuts are sufficiently better to maintain operations at 60 to 65 per cent, and quotations are firm.

Old Material.—Increasing mill operation is making for a better demand, with evidences of a shortage of

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Soft steel bars	3.30c.
Reinforcing bars	2.75c.
Cold-finished flats, squares and hexagons	4.45c.
Rounds	3.95c.
Cold rolled strip steel	5.85c.
Black sheets (No. 24)	4.30c.
Galvanized sheets (No. 24)	5.15c.
Blue annealed sheets (No. 10)	3.80c.
Common wire nails, base per keg	\$3.65
Black wire, base per 100 lb.	3.90

strictly No. 1 heavy melting steel. Most of the yard stocks are low and mill stocks are not heavy. Sales of knuckles and couplers have been made, and there has been some selling of railroad malleable at \$15.50.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades		
No. 1 heavy melting steel	\$14.75 to \$15.25	
No. 2 heavy melting steel	13.25 to 13.75	
Scrap rails	13.75 to 14.25	
Hydraulic compressed sheets	13.25 to 13.75	
Hand bundled sheets	9.00 to 9.50	
Drop forge flashings	11.50 to 12.00	
No. 1 busheling	13.25 to 13.75	
Heavy steel axle turnings	12.75 to 13.25	
Machine shop turnings	9.00 to 9.25	
Acid Open-Hearth Grades		
Railroad knuckles and couplers	16.50	
Railroad coil and leaf springs	16.50	
Rolled steel wheels	16.50	
Low phosphorus billet and bloom ends	17.00 to 17.50	
Electric Furnace Grades		
Heavy steel axle turnings	12.75 to 13.25	
Short shoveling steel turnings	11.00 to 11.50	
Blast Furnace Grades		
Short shoveling steel turnings	10.75 to 11.00	
Short mixed borings and turnings	10.50 to 11.00	
Cast iron borings	10.50 to 11.00	
No. 2 busheling	9.00 to 9.50	
Rolling Mill Grades		
Steel car axles	17.00 to 17.50	
No. 1 railroad wrought	12.50 to 13.00	
Cupola Grades		
No. 1 machinery cast	14.50 to 15.00	
Stove plate	13.00 to 13.25	
Locomotive grate bars	11.00 to 11.50	
Steel rails, 3 ft. and under	17.00 to 17.25	
Cast iron carwheels	13.00 to 13.50	
Malleable Grades		
Railroad	15.50	
Agricultural	15.50	
Industrial	15.50	

San Francisco

Price Advances on Steel Products Extend to Pacific Coast Trade

SAN FRANCISCO, Feb. 11.—(By Air Mail).—Advances in the c.i.f. prices on several domestic iron and steel products, following recent announcement of higher levels in the Eastern markets, were announced this week. Shape mill representatives and fabricators are encouraged by the number of new and pending projects up for figures. The largest award of the week involved 2400 tons of structural shapes for the Northern Life Insurance Building, Seattle, secured by the Wallace Bridge & Structural Steel Co. and the Hofius Steel & Equipment Co. of Seattle.

Pig Iron.—A tabulation of imports for November shows a total brought in at Pacific Coast ports of 1794 tons, compared with 811 tons for the previous month. Los Angeles took 650 tons and San Francisco 595, the remainder going to Portland and Seattle. Most of this material came from India. Demand is by no means heavy, most foundries having sufficient stock on hand to take care of their requirements for two months. Prices continue unchanged.

Prices per gross ton at San Francisco:

*Utah basic	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25	25.00 to 26.00
**Indian foundry, sil. 2.75 to 3.25	24.00 to 25.00
**German foundry, sil. 2.75 to 3.25	24.25

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Shapes.—Awards for the week exceeded 3600 tons and, in addition to the 2400 tons mentioned above, the Stubbs Co., St. Louis, took 600 tons for a building for the Government at Cristobal. Pending business calls for 27,000 tons. An inquiry for 800 tons of sheet steel

Warehouse Prices, f.o.b. San Francisco

Base per Lb.

Plates and structural shapes	3.15c.
Soft steel bars	3.15c.
Small angles, $\frac{1}{8}$ -in. and over	3.15c.
Small angles, under $\frac{1}{8}$ -in.	3.55c.
Small channels and tees, $\frac{3}{8}$ -in. to $2\frac{1}{4}$ -in.	3.75c.
Spring steel, $\frac{1}{4}$ -in. and thicker	5.00c.
Black sheets (No. 24)	4.95c.
Blue annealed sheets (No. 10)	3.90c.
Galvanized sheets (No. 24)	5.50c.
Structural rivets, $\frac{1}{2}$ -in. and larger	5.65c.
Common wire nails, base per keg	\$3.40
Cement coated nails, 100-lb. keg	3.40

piling for the Coyote Point bridge across San Francisco bay has been withdrawn as other material will be used. Structural material imported in November totaled 4961 tons as compared with 2041 tons for the preceding month. Of this total, San Francisco fabricators took 2983 tons and Los Angeles interests 1331 tons. More than half of this tonnage came from Belgian mills. Domestic prices are firm at 2.35c., c.i.f.

Plates.—The only plate award of importance was booked by the Worth Steel Co. and involved 250 tons for the Mare Island Navy Yard. No action has been taken on 5000 tons of plates and shapes for a Standard Oil tanker. Inquiries include 170 tons of universal plates for 800 box cars for the Western Pacific Railroad and approximately 400 tons for three months' requirements for the Standard Oil Co., San Francisco. Plate prices have been advanced \$1 a ton, from 2.25c. to 2.30c., c.i.f.

Bars.—Several important reinforcing bar tonnages will be up for figures in the near future. Two of these projects involve over 6500 tons for two drainage district improvement jobs in Los Angeles. Bids are being taken for 600 tons for the Big Dalton Dam at Los Angeles. In November 2843 tons of foreign merchant and reinforcing bars entered Pacific ports. San Francisco took 1645 tons and Portland and Los Angeles about 600 tons each. Close to 1000 tons of this total came from French mills.

Cast Iron Pipe.—Lettings this week included 154 tons of 4 to 8-in. class B pipe for Chehalis, Wash., booked by the Pacific States Cast Iron Pipe Co.; 369 tons of 4 to 8-in. class B for the improvement of streets in Paradise Hills, San Diego, taken by the United Concrete Pipe & Construction Co. of San Diego; 217 tons of 6 to 10-in. class B for the improvement of Long Beach Boulevard, Lynwood, Cal.; 153 tons of 6 to 10-in. class B for the improvement of Main Street, San Diego, awarded to the Butterfield Construction Co. of San Diego, and 119 tons of 8-in. class B for Eureka, Cal., taken by B. Nicoll & Co. Bids have been opened on 1244 tons of 6 to 12-in. class C and D pipe for Vancouver, B. C., and on 156 tons of 4 and 8-in. class B for the improvement of Pacific Street, Oceanside, Cal. Bids will be opened soon on 222 tons of 4 to 8-in. class B for Armona, Cal., and on Feb. 21 for 3095 tons of 4 to 12-in. class B for Southgate, Cal. Importations during November totaled 1782 tons as compared with 2043 tons for the previous month. Nearly 1500 tons was shipped by French foundries.

Steel Pipe.—Some improvement in demand is reported. The Grinnell Co. was low bidder on two lots of welded steel pipe for Los Angeles. One specification called for 100,000 ft. of 6-in. involving 950 tons, and the other for 30,000 ft., or 285 tons.

Cold-Rolled Material.—Prices have advanced \$2 a ton in this market and current business, such as it is, is being quoted on at 2.30c., base Pittsburgh, or equivalent.

Wire Products.—Wire nail prices have been advanced by from \$3 to \$4 a ton and practically all producers are now holding to the new level of \$3.10 per keg, c.i.f. Coast ports.

Sheets.—Sheet prices have been advanced \$3 to \$4 a ton and the new prices appear to be firm at 2.75c., 3.60c. and 4.40c., c.i.f. Coast ports, on blue annealed, black and galvanized sheets, respectively. The Southern Pacific Co. has an inquiry out covering three months' requirements.

Warehouse Business.—Out-of-stock prices on nails have been advanced from 3.25c. to 3.40c., and black sheets, 24 gage, from 4.80c. to 4.95c. Galvanized sheets, 24 gage, have advanced from 5.35c. to 5.50c. and blue annealed, 10 gage, from 3.75c. to 3.90c.

Revenue freight loaded in the week ended Jan. 28 is reported by the American Railway Association at 902,832 cars, a gain of more than 2 per cent from the 884,095 cars of the preceding week. The total has been consistently below the corresponding figures of the two preceding years, the most recent comparison being with 943,879 cars in the corresponding week of 1927 and 925,696 in 1926.

Cincinnati

Pig Iron Dull—Scrap Weak—Steel Shipments Continue at Good Rate

CINCINNATI, Feb. 14.—Dullness pervades the southern Ohio pig iron market. Sales and inquiries have been so few that dealers have had to go back many years to find a parallel condition. The situation at Ironton is far from satisfactory, the shutting down of the Belfont furnace having brought to a temporary halt at least all production of merchant pig iron at that point. The Belfont company has considerable iron on its yards over and above the tonnage required to fill current contracts. The Marting Iron & Steel Co., on the other hand, has reduced its stocks substantially in the last few months, but still does not find prices sufficiently high to justify blowing in either of its furnaces. Southern Ohio foundry iron continues on a basis of \$19, furnace. Lake Erie makers are reported to be quoting \$17, base Cleveland, and whether they will go under that figure to obtain orders at points where they are at a freight disadvantage is uncertain. Alabama and Tennessee irons are firm at \$16, base Birmingham, in the South, but sales north of the Ohio River have been of little consequence. The demand for Jackson County silvery iron is fair and prices are steady.

Prices per gross ton, delivered Cincinnati:

So. Ohio fdv., sil. 1.75 to 2.25....	\$20.89
So. Ohio malleable.....	\$20.14 to 20.89
Alabama fdv., sil. 1.75 to 2.25....	19.69
Alabama fdv., sil. 2.25 to 2.75....	20.19
Tennessee fdv., sil. 1.75 to 2.25....	19.69
Southern Ohio silvery, 8 per cent	26.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

Finished Material.—Makers of bars, shapes and plates report that specifications and orders have declined slightly in the past week. Nevertheless, operations of industrial consumers in this district show no diminution, and shipments from mills are going forward on a gradually expanding scale. The seasonal lull in structural steel is holding back activities in that line. Small fabricators are increasing production as a result of obtaining numerous small jobs, but the larger companies report a dearth of important projects. Quotations on bars, structural shapes and plates remain firm at 1.85c., base Pittsburgh. Conditions in the sheet market are considered favorable. The American Rolling Mill Co. has followed the lead of other companies by announcing the following prices for second quarter: 2.10c., base Pittsburgh, for blue annealed, 2.90c. for black, 3.75c. for galvanized and 4.15c. for automobile body sheets. The company's operations at its four plants have been increased to full capacity, and recent bookings have been fully equal to the volume of production. Orders have been well balanced among all consuming lines, specifications from automobile manufacturers having been particularly good. The wire goods market has been more active than usual, the demand for nails having been brisk. Specifications against old contracts have been sizable. Common wire nails are quoted at \$2.65 per keg, Pittsburgh or Ironton, and plain wire at \$2.50 per 100 lb., Pittsburgh or Ironton. Sales of cold-rolled bars and of cold-rolled strip steel have turned upward in the past two weeks.

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes....	3.40c.
Bars, soft steel or iron.....	3.30c.
New billet reinforcing bars.....	3.15c.
Rail steel reinforcing bars.....	3.00c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Black sheets (No. 24).....	4.05c.
Galvanized sheets (No. 24).....	4.90c.
Blue annealed sheets (No. 10)...	3.60c.
Structural rivets	3.85c.
Small rivets	65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base 100 lb. keg.....	2.95
Chain, per 100 lb.....	7.55
	Net per 100 Ft.
Lap-welded steel boiler tubes, 2-in.....	\$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.	39.00

Reinforcing Bars.—Bids on a new building for Christ Hospital, Cincinnati, are being taken by Tietig & Lee, architects, Cincinnati. The bar requirements probably will total 250 tons. Prices of new billet bars range from 1.85c. to 1.95c., base Pittsburgh. Producers of rail steel stock have advanced quotations \$1 a ton to 1.80c., base mill, but will go to 1.75c. to secure attractive orders.

Warehouse Business.—The basis upon which reinforcing bars are being quoted for delivery out of local jobbers' warehouses has been changed so as to set up a differential of \$3 a ton between new billet and rail steel bars. The new schedule calls for 3c. on rail steel bars and 3.15c. on new billet stock for delivery in the metropolitan Cincinnati district. For shipment to other points, new billet bars are priced at 3.05c. Readjustments also have been made on a number of products for delivery to Southern cities so that the delivered price is equalized with that from other markets which have a freight advantage over Cincinnati. However, this has in nowise affected the general list of quotations applying in the metropolitan Cincinnati area. Sales have been moderate in volume.

Coke.—Specifications for by-product foundry coke are at a fairly good rate and promise to continue on the present basis through February. Movement of beehive foundry coke from the Wise County and New River districts has been sluggish, but prices have remained firm in the face of a somewhat stagnant market.

Foundry coke prices per net ton, delivered Cincinnati: By-product coke, \$9.52 to \$9.64; Wise County coke, \$7.59 to \$8.09; New River coke, \$10.09 to \$10.59. Freight rates, \$2.14 from Ashland, Ky.; \$2.59 from Wise County and New River ovens.

Old Material.—A further recession in sales has occurred in the past week with the result that quotations on a few items have been adversely affected. Mills in this district are buying small quantities of material to meet current requirements, but are paying far less for their scrap than dealers predicted a month ago. Without exception foundry grades are quiet.

Dealers' buying prices per gross ton f.o.b. cars, Cincinnati:

Heavy melting steel	\$11.50 to \$12.00
Scrap rails for melting	12.25 to 12.75
Loose sheet clippings	9.00 to 9.50
Bundled sheets	9.50 to 10.00
Cast iron borings.....	8.00 to 8.50
Machine shop turnings.....	8.50 to 9.00
No. 1 busheling	10.50 to 11.00
No. 2 busheling	7.50 to 8.00
Rails for rolling	13.00 to 13.50
No. 1 locomotive tires	13.50 to 14.00
No. 1 railroad wrought	11.50 to 12.00
Short rails	16.50 to 17.00
Cast iron carwheels	12.75 to 13.25
No. 1 machinery cast	16.00 to 17.00
No. 1 railroad cast	13.50 to 14.00
Burnt cast	8.00 to 8.50
Stove plate	9.00 to 9.50
Brake shoes	10.00 to 10.75
Railroad malleable	12.75 to 13.25
Agicultural malleable	12.25 to 12.75

Birmingham

Pig Iron Firmer—Steady Demand for Steel Continues

BIRMINGHAM, Feb. 14.—The pig iron market is said to be somewhat firmer. Sales last week were slightly larger than in the one preceding, but new business continues mostly in small lots. Several sizable orders are pending. These will be booked for first quarter, with a carry-over into second quarter allowed. Second quarter inquiries are developing but furnaces are not booking or quoting at this time. Foundry iron quotations remain on a \$16 base. The Tennessee company has blown in Bessemer No. 2 and it is now on basic. This offsets the blowing out of the Sloss-Sheffield No. 1 city furnace, which is to be rebuilt and enlarged. Seventeen furnaces are in blast in the district.

Prices per gross ton, f.o.b. Birmingham district furnaces:

No. 2 foundry, 1.75 to 2.25 sil.....	\$16.00
No. 1 foundry, 2.25 to 2.75 sil.....	16.50
Basic	15.00

Finished Steel.—A fairly steady demand upon the mills continues, in line with market conditions of the past several weeks, but structural steel and plate fab-

ricators report only a nominal amount of new business. The Tennessee company has put on another open-hearth furnace at the Fairfield Works, now operating five. At Ensley eight and nine are producing. The Gulf States Steel Co. continues with four.

Cast Iron Pipe.—A good volume of business is developing in small tonnage orders. Several jobs are coming up in Georgia, Mississippi and Florida. Plant operations have slightly increased. Base price, for immediate delivery, is now \$28.50 and \$29.

Coke.—There is very little spot demand at the present time as most of the first quarter requirements have been booked. Shipments are going forward at a steady rate. Quotations for both spot and contract remain at \$5.

Old Material.—Demand for steel rails is better, but business in other lines shows but little improvement.

Prices per gross ton, delivered Birmingham district consumers' yards:

Heavy melting steel	\$9.50 to \$10.00
Scrap steel rails	11.00 to 11.50
Short shoveling turnings	8.00 to 8.50
Cast iron borings	8.00 to 8.50
Stove plate	13.00 to 14.00
Steel axles	19.00 to 20.00
Iron axles	20.00 to 21.00
No. 1 railroad wrought	10.00 to 10.50
Rails for rolling	13.00
No. 1 cast	15.00
Tramcar wheels	12.50 to 13.50
Cast iron carwheels	12.00 to 13.00
Cast iron borings, chemical	13.50 to 14.00

Detroit

Motor Car Companies Increasing Production Schedules Over 1927

DETROIT, Feb. 14.—The volume of steel bookings in the Detroit district is still on the increase, with about 5 per cent gain during the past week. This is largely accounted for in the rapidly mounting production schedules of the principal automobile companies.

For instance, the Graham-Paige Motors Corporation turned out 1497 cars last month, as compared with 1374 for the same month a year ago, and 1021 for December, 1927. The Chevrolet Motor Co. produced 91,681 cars and trucks in January, as against 73,676 in January, 1927. The schedule for this month has been set at 110,000 cars and trucks.

The Packard Motor Car Co. brought out 4150 cars in January of this year, as compared with 3857 in December and 2300 in January a year ago. The schedule for this month will surpass the January figure.

The Oakland Motor Car Co. turned out 3095 cars in January of this year, as against 2217 for the same month a year ago. The corresponding figures for Pontiac are 16,178 for January of this year, and 5824 for the same month a year ago. The schedule for the present month of Oakland and Pontiac combined is set at 22,268.

The Hupp Motor Car Corporation produced 3610 cars last month, 3763 during the month previous to that, and 2749 in January a year ago.

The Hudson-Essex January, 1928, production ran to 25,390, as against 12,000 in January a year ago. The objective at the Hudson-Essex plant is 1460 cars per day, which will be reached in the near future.

Dodge Brothers' production of cars and trucks is mounting steadily, and will reach a figure of 1650 units per day about March 1.

The Ford Motor Co. is still behind its schedule, the present rate being approximately 1200 cars per day, but 2000 cars per day may be reached by March 1, which would be 30 days behind the original estimate.

The Buick Motor Co.'s production for January of 17,042 is a big advance over the previous month, which showed only 12,900, but the January figure is below that for the same month a year ago of 18,260.

The Reo Motor Car Co. turned out 2384 cars in January, as against 2322 a year ago. February production will show a substantial increase over January.

Prices on automobile steel generally are firm. There have been no large orders in structural shapes, bars and plates during the last week. However, there has been a satisfactory increase in small-lot structural orders.

With no sales involving large tonnage during the past week in this district, market conditions on old material are about the same as a week ago. A decline of 25c. per ton was recorded on hydraulic compressed scrap and flashings. The general feeling seems to be that the present prices are about at the bottom.

Dealers' buying prices per gross ton, f.o.b. cars, Detroit:

Heavy melting and shoveling steel	\$12.00 to \$12.50
Borings and short turnings	8.75 to 9.25
Long turnings	7.75 to 8.25
No. 1 machinery cast	14.50 to 15.50
Automobile cast	18.00 to 19.00
Hydraulic compressed sheets	10.50 to 11.00
Stove plate	11.50 to 12.50
No. 1 busheling	9.50 to 10.00
Sheet clippings	7.50 to 8.00
Flashings	9.75 to 10.25

Canada

Railroad Orders Placed With Canadian and American Mills

TORONTO, ONT., Feb. 14.—The past week has been active in the iron and steel industry of Canada. New business has been in larger volume than for some time and many lines of industry have benefitted. The Algoma Steel Corporation, Sault Ste. Marie, Ont., the British Empire Steel Corporation, and a number of other Canadian companies shared in the orders placed by the Canadian National Railways, which included the following: For Canadian lines, 10,115 tons of 100-lb. rails, 7881 tons of 85-lb. rails, 647 gross tons splice bars, 141 gross tons of bolts, 208 gross tons spikes, 1121 gross tons plates, 49 gross tons shimming spikes and 56,020 rail anchors. Orders placed by the Canadian National Railways with United States firms for American lines include 11,550 gross tons of 100-lb. rails, 33 gross tons of bolts, 71 gross tons of splice bars, 74,788 rail anchors, 19 gross tons of spikes and 195 gross tons of tie plates.

The mills at Sault Ste. Marie, Ont., Hamilton, Ont., and at Sydney, N. S., are running almost at capacity.

Pig Iron.—Pig iron sales are showing slow but steady improvement, though most melters are covered by contract to the end of March. A good demand is reported for prompt shipment and orders for from 100 to 500 tons are appearing. Six furnaces in Canada are now in blast. While there has been no change in pig iron prices in the Toronto market, producers are asking slightly higher prices in Montreal.

Prices per gross ton:

Delivered Toronto	
No. 1 foundry, sil. 2.25 to 2.75	\$23.60
No. 2 foundry, sil. 1.75 to 2.25	23.60
Malleable	23.60
Delivered Montreal	
No. 1 foundry, sil. 2.25 to 2.75	\$25.00 to \$25.50
No. 2 foundry, sil. 1.75 to 2.25	25.00 to 25.50
Malleable	25.00 to 25.50
Basic	24.00
Imported Iron at Montreal Warehouse	
Summerlee	33.50
Carron	33.00

Old Material.—Considerable tonnages of old material have been thrown on the market lately and this has had a softening effect on prices. Recent purchases of heavy melting steel by dealers have ranged from \$8 to \$9 per gross ton, Toronto.

Dealers' buying prices:

	Per Gross Ton	
Toronto		Montreal
Heavy melting steel	\$9.00	\$8.00
Rails, scrap	10.00	10.00
No. 1 wrought	9.00	11.00
Machine shop turnings	7.00	6.00
Boiler plate	7.00	7.00
Heavy axle turnings	7.50	7.50
Cast borings	7.50	6.00
Steel turnings	7.00	6.50
Wrought pipe	5.00	6.00
Steel axles	14.00	19.00
Axes, wrought iron	16.00	21.00
No. 1 machinery cast	...	16.00
Stove plate	...	12.00
Standard carwheels	...	14.50
Malleable	...	13.00
	Per Net Ton	
No. 1 machinery cast	15.00	...
Stove plate	9.00	...
Standard carwheels	13.00	...
Malleable scrap	13.00	...

NON-FERROUS METAL MARKETS

**The
Week's
Prices
Cents per Pound
for
Early Delivery**

	Feb. 14	Feb. 11	Feb. 10	Feb. 9	Feb. 8
Lake copper, New York	14.25	14.25	14.25	14.25	14.25
Electrolytic copper, N. Y.	13.87 1/2	13.82 1/2	13.82 1/2	13.82 1/2	13.82 1/2
Straits tin, spot, N. Y.	51.87 1/2	51.87 1/2	52.87 1/2	53.12 1/2	53.05
Lead, New York	6.35	6.35	6.35	6.45	6.45
Lead, St. Louis	6.12 1/2	6.12 1/2	6.12 1/2	6.22 1/2	6.22 1/2
Zinc, New York	5.95	5.97 1/2	5.97 1/2	5.97 1/2	5.97 1/2
Zinc, St. Louis	5.60	5.62 1/2	5.62 1/2	5.62 1/2	5.62 1/2

*Refinery quotation; delivered price 1/4c. higher.

NEW YORK, Feb. 14.—All the markets are quiet, with the price tendency downward in some. Copper has generally held its own despite some shading. Tin has gone to new low levels on this movement, with buying quite heavy. Lead prices have been reduced for the first time in some weeks. Zinc is a little weaker, with demand very light.

Copper.—Demand both from foreign and domestic consumers has been very light the past week. The few sales of electrolytic copper that have been made have, in most cases, been done at around 14.07 1/2c., delivered in the Connecticut Valley, but a quotation of 14.12 1/2c. is still maintained by practically all large producers. The shading has been done in most cases by one or two custom smelters. The statistics for January which appeared early this week, were considered favorable to sellers. They showed a reduction in mining of ore in January of about 200 tons a day, and a decrease in stocks of metal in both the blister and refined condition of about 9000 tons. It is stated that consumers, both here and abroad, particularly the latter, still have considerable metal to purchase for delivery this month and in March. Because of this and the statistical condition of the industry, some producers are optimistic and expect a buying movement in the near future. The Lake copper market is quiet, but firm, at 14.25c. delivered.

Tin.—New low prices, accompanied by large sales, have been the feature of the week. Not less than 1700 tons changed hands and possibly the total ran as high as 2000 tons. Consumers bought freely, but the market continued to decline. The weakness is ascribed partly to the anxiety to make sales and to the attitude of

consumers who have been buying on a scale downward and not on reactions. Yesterday, when the market was closed here because of the holiday, the London market broke over £5 per ton, but rebounded today about £3 per ton. The local market has not been very active today, with moderate sales of futures reported at 51.75c. to 51.87 1/2c. and with spot Straits tin quoted nominal at 51.87 1/2c. New York. In London today spot standard tin was quoted at £231 5s., future standard at £233 15s. and spot Straits also at £233 15s., all quotations about £7 per ton less than a week ago. Arrivals thus far this month have been 2110 tons, with 5070 tons reported afloat.

Lead.—For the first time in many weeks the American Smelting & Refining Co. reduced its contract price from 6.50c. to 6.35c., New York. The fact that the outside market had practically reached this level was the cause of the reduction. In St. Louis quotations range from 6.10c. to 6.15c. The market is generally quiet, with demand moderate.

Zinc.—Prime Western zinc has hovered around 5.62 1/2c., St. Louis, for the past week and today is a little lower at 5.60c., St. Louis, or 5.95c., New York. Demand is reported as only moderate, and the market is generally very quiet. Ore prices at Joplin fell \$2 per ton last week to \$36. Sales were only 7000 tons, with production at about 12,500 tons. Statistics for the month of January show stocks of refined metal to have been reduced about 1200 tons.

Nickel.—Ingot nickel in wholesale lots is quoted at 35c., with shot nickel at 36c., and electrolytic nickel at 37c. per lb.

Antimony.—This market is very quiet, with Chinese metal for spot delivery quoted at 11c. and futures at 11.12 1/2c. New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, in ingots, is quoted at 23.90c. per lb. delivered.

Non-Ferrous Metals at Chicago

CHICAGO, Feb. 14.—This week is characterized by a steady flow of orders, many of which are for more extended delivery. Prices for tin and lead are lower. The

Non-Ferrous Rolled Products

Bronze, brass and copper products at mill are unchanged in price, and no revisions are reported in quotations on lead full sheets and zinc sheets.

List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—	
High brass	18.75c.
Copper, hot rolled	22.75c.
Zinc	10.00c.
Lead (full sheets)—	
High brass	23.62 1/2c.
Copper	24.50c.
Rods—	
High brass	16.50c.
Naval brass	19.25c.
Wire—	
Copper	15.75c.
High brass	19.25c.
Copper in Rolls	21.75c.
Brazed Brass Tubing	26.75c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide... 33.00c.
Tubes, base... 42.00c.

Machine rods... 34.00c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.

Sheets—	
High brass	18.50c. to 19.25c.
Copper, hot rolled	22.75c. to 23.75c.
Copper, cold rolled, 14 oz. and heavier	25.25c. to 26.25c.

Seamless Tubes—	
Brass	23.37 1/2c. to 24.37 1/2c.
Copper	24.50c. to 25.50c.
Brazed Brass Tubes	26.50c. to 27.50c.
Brass Rods	16.25c. to 17.25c.

From New York Warehouse

Delivered Prices, Base Per Lb.

Zinc sheets (No. 9), casks	10.00c. to 10.50c.
Zinc sheets, open	10.50c. to 11.00c.

Rolled Metals, f.o.b. Chicago Warehouse
(Prices Cover Trucking to Consumers' Doors in City Limits)

Sheets—	Base per Lb.
High brass	18.75c.
Copper, hot rolled	22.75c.
Copper, cold rolled, 14 oz. and heavier	25.00c.
Zinc	11.00c.
Lead, wide	9.75c.
Seamless Tubes—	
Brass	25.12 1/2c.
Copper	26.00c.
Brazed Brass Tubes	26.75c.
Brass Rods	16.50c.

old metal market is moderately active and prices are steady.

Prices, per lb., in carload lots: Lake copper, 14.25c.; tin, 54c.; lead, 6.30c.; zinc, 5.75c.; in less-than-carload lots, antimony, 12.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10c.; copper bottoms, 9c.; red brass, 9c.; yellow brass, 6.75c.; lead pipe, 5c.; zinc, 3.25c.; pewter, No. 1, 34c.; tin foil, 40c.; block tin, 50c.; aluminum, 12.50c.; all being dealers' prices for less-than-carload lots.

REINFORCING STEEL

Los Angeles Drainage Improvement Will Take 6400 Tons—4500 Tons in Cleveland Terminals

TWO drainage improvement jobs in Los Angeles, requiring 6400 tons, brought the week's new inquiries to a total of 8150 tons. Awards of 8200 tons included 4500 tons for the Cleveland Union Terminals. Awards follow:

PHILADELPHIA, 225 tons, school at Seventeenth and Tasker Streets, to American Steel Engineering Co.
CAMDEN, N. J., 900 tons of rail steel bars, building for Camden Cold Storage Co., to unnamed bidder.
MAYVIEW, PA., 250 tons, Pittsburgh Municipal Hospital, to Carlem Engineering Co.
CHICAGO, 110 tons of rail steel bars for road work, to Concrete Engineering Co.
EVANSTON, ILL., 400 tons of rail steel bars for Boltwood public school, to Calumet Steel Co.
TACOMA, WASH., 500 tons, Union Bag Co. plant, to Pacific Coast Steel Co.
SEATTLE, 350 tons, Northern Life Building, divided between Pacific Coast Steel Co. and Northwest Rolling Mills.
SEATTLE, 250 tons, garage, to Pacific Coast Steel Co.
CLEVELAND, 750 tons, Whitehouse Crossing grade elimination, to Bourne-Fuller Co.
CLEVELAND, 4500 tons, work for Cleveland Union Terminals Co., to Bourne-Fuller Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

NEW YORK, 250 tons, pier for Erie Railroad.
CHICAGO, tonnage being estimated, cooperative apartment building at 1325 Astor Street.
CHICAGO, tonnage being estimated, Drake Tower; B. H. Marshall, architect.
CHICAGO, 300 tons, apartment building at 14 West Elm Street; William Bernhard, architect.
ST. LOUIS, 380 tons; building for Lindell Trust Co. at Grand and St. Louis Avenues, 150 tons; southern approach to Municipal bridge across Mississippi River, 130 tons, and garage at Thirteenth and St. Charles Streets, 100 tons.
LITTLE ROCK, ARK., 100 tons, bridge over Arkansas River for Missouri Pacific Railroad; E. A. Hadley, St. Louis, chief engineer.
LOS ANGELES, 5200 tons, Drainage District Improvement No. 23; bids about March 12.
LOS ANGELES, 1220 tons, Drainage District Improvement No. 22; bids taken.
LOS ANGELES, 600 tons, Big Dalton Dam; bids Feb. 20.
SAN DIEGO, CAL., 100 tons, pier foot of E Street for United States Navy; bids March 3.

The Concrete Reinforcing Steel Institute will hold its fourth annual meeting at the Edgewater Gulf Hotel, Biloxi, Miss., March 19-21. M. A. Beeman, Tribune Tower, Chicago, is secretary.

Old Metals, Per Lb., New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators and the selling prices are those charged consumers after the metal has been properly prepared for their use.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	12.00c.	13.50c.
Copper, heavy and wire	11.75c.	12.875c.
Copper, light and bottoms	10.00c.	11.25c.
Brass, heavy	7.00c.	8.50c.
Brass, light	6.00c.	7.50c.
Heavy machine composition	9.50c.	10.75c.
No. 1 yellow brass turnings	7.75c.	9.00c.
No. 1 red brass or composition turnings	8.75c.	9.75c.
Lead, heavy	5.25c.	5.625c.
Lead, tea	4.25c.	4.75c.
Zinc	3.75c.	4.25c.
Sheet aluminum	12.75c.	14.50c.
Cast aluminum	12.75c.	14.50c.

RAILROAD EQUIPMENT

Norfolk & Western Orders 1000 Hopper Bodies —New York Central Inquires for Ten Locomotives

FALLING somewhat below the average of recent weeks, railroad buying included few large orders. Purchase of 1000 hopper car bodies by the Norfolk & Western was the outstanding transaction. A South American road has made inquiry for a list of miscellaneous cars. The New York Central will buy 10 locomotives for service on the Boston & Albany. Details of the week's business follow:

Norfolk & Western has ordered 1000 hopper car bodies from Ralston Steel Car Co.

Delaware & Hudson has ordered three mail and baggage cars from American Car & Foundry Co.

State Railways of Uruguay have made inquiry for the following items: Three first class passenger coaches, one Pullman coach, two dining cars, two baggage cars, 10 box cars, 32 stock cars and one auxiliary crane.

Anglo-Chile Nitrate Co. has ordered 50 flat cars from American Car & Foundry Co.

Tennessee Copper Co. has ordered one six-wheel switching locomotive from American Locomotive Co.

Sinclair Refining Co. has ordered one six-wheel switching locomotive from Baldwin Locomotive Works.

Amorg Trading Corporation has placed an order for 200 dump cars with American Car & Foundry Co.

Chicago & Alton has ordered seven baggage and mail and two postal cars from Pullman Car & Mfg. Corporation.

New York Central is inquiring for 10 locomotives for service on Boston & Albany.

Northern Pacific has ordered one articulated-type locomotive from American Locomotive Co.

Chicago, Rock Island & Pacific will buy 11 70-ft. passenger, baggage and mail service gas-electric cars.

Toronto, Hamilton & Buffalo has ordered two locomotives from Montreal Locomotive Works.

New York Metal Merchants Hold Dinner

The Metal Merchants' Credit Association, New York, held its fourth annual dinner at the Waldorf-Astoria Hotel, Feb. 9. The dinner was followed by an entertainment. Guests of the association included representatives of the Bethlehem Steel Co., Youngstown Sheet & Tube Co., Central Alloy Steel Co., Apollo Steel Co., American Rolling Mill Co., Weirton Steel Co., Superior Sheet Steel Co., Republic Iron & Steel Co., Eastern Rolling Mill Co. and the Newton Steel Co. Officers of the association for 1928 are: J. George Fuchs of Hoffman & Scofield-Bruce & Cook, Inc., New York, executive secretary, and Richard H. Lippincott, Jr., of Dickerson, Van Dusen & Co., New York, vice-chairman.

One outstanding feature of United States shipments of agricultural implements in 1927 was the large total which went to Canada, amounting to \$29,791,472. This was 33 per cent of the total shipped to all countries and exceeded the shipments to all of Europe by more than \$8,000,000, according to the Agricultural Implements Division, Department of Commerce.

FABRICATED STRUCTURAL STEEL

Awards of 67,900 Tons—19,000 for Chicago Building and 15,000 in Santa Fe Bridge Work

WITH 19,000 tons for the Chicago Civic Opera Building, 15,000 tons in bridge requirements for the Santa Fe railroad, 11,000 tons for a bridge at Vicksburg, Miss., and 8000 tons for a viaduct at Milwaukee, structural awards during the last week amounted to 67,900 tons. This total has been exceeded but once in the present year. New projects added to pending work totaled 29,300 tons, the largest of which was an oil tanker for the Standard Oil Co. Awards follow:

NEW YORK, 900 tons, building for Empire Mortgage Co. on Fifth Avenue, to Hay Foundry & Iron Works.
PHILADELPHIA, 400 tons, building for Bell Telephone Co., to Shoemaker Bridge Co.
TAYLOR, S. C., 400 tons, foundry building, to Southern Engineering Co.
STATE OF MICHIGAN, 170 tons, bridge work for State Highway Commission, to Massillon Bridge & Structural Co.
NEWARK, N. J., 850 tons, Journal Square station and office building, to American Bridge Co.
PHILADELPHIA, 950 tons, Ninth Bank & Trust Co. Building, to Bethlehem Fabricators, Inc.
PHILADELPHIA, 150 tons, addition to West Philadelphia Title & Trust Co., to Robinson Iron & Steel Co.
WASHINGTON, 1000 tons, addition to Bennings power plant, Potomac Electric Power Co., to Jones & Laughlin Steel Corporation.
ZANESVILLE, OHIO, 180 tons, two sand barges for Muskingum River Sand & Gravel Co., to Jones & Laughlin Steel Corporation.
VICKSBURG, MISS., 16,000 tons, railroad and highway bridge; 11,000 tons for superstructure, to American Bridge Co., and 5000 tons in approaches, to Virginia Bridge & Iron Co., the latter previously reported.
BOGALUSA, LA., 200 tons, building for Bogalusa Paper Co., to the Virginia Bridge & Iron Co.
ANN ARBOR, MICH., 550 tons, First National Bank Building, to Whitehead & Kales.
DETROIT, 320 tons, Bank of Detroit, to Guibert Steel Co., Pittsburgh, previously reported awarded to a local fabricator.
BLOOMINGTON, IND., 700 tons, building for University of Indiana, to an unnamed bidder.
CHICAGO, 19,000 tons, Civic Opera House, to McClintic-Marshall Co.
CHICAGO, 300 tons, Harlam Avenue bridge, to American Bridge Co.
CHICAGO, 1400 tons, Sheridan Towers apartment building, to Hansell-Elcock Co.
CHICAGO, 300 tons, building for Straus & Schram, to Butler Street Foundry & Iron Co., local.
ATCHISON, TOPEKA & SANTA FE, 15,000 tons for 1928 bridge work, to American Bridge Co.
MILWAUKEE, 8000 tons, Sixteenth Street viaduct, to Julius C. Theilacker, 5924 Washington Boulevard, Milwaukee, for fabrication only; separate bids being taken on erection.
TACOMA, WASH., 1250 tons, buildings for Union Bag & Paper Co.; 500 tons to Hofius Steel & Equipment Co., 250 tons to Lidgerwood Pacific Co., and 500 tons to Star Iron & Steel Co.
SEATTLE, 2300 tons, Northern Life Building, equally divided between Wallace Bridge & Structural Steel Co. and Hofius Steel & Equipment Co.
CRISTOBAL, CANAL ZONE, 600 tons, Government building, to Stubbs Co., St. Louis.
MARE ISLAND, CAL., 250 tons of plates for Navy Yard, to Worth Steel Co.
SAN FRANCISCO, 263 tons, apartment building at Pacific and Laguna Streets, to McClintic-Marshall Co.
SAN FRANCISCO, 130 tons, apartment building at Gough and Fern Streets, to Golden Gate Iron Works.
SAN FRANCISCO, 120 tons, theater on Geneva Street, to Mortenson Construction Co.
FRESNO, CAL., 500 tons, ice plant for Pacific Fruit Express Co., to Minneapolis Steel & Machinery Co.
LOS ANGELES, 200 tons, power house, Fifty-eighth and Figueroa Streets, to McClintic-Marshall Co.
HONOLULU, 800 tons, office building for Alexander & Baldwin, to Honolulu Iron Works.

Structural Projects Pending

Inquiries for fabricated steel work include the following:
STATE OF VERMONT, 500 tons, highway bridges for flood rehabilitation.
NEW YORK, 900 tons, pier for Erie Railroad.
ROCHESTER, N. Y., 2200 tons, high school; bids taken Feb. 23.

PHILADELPHIA, 600 tons, building for Temple University.
PENNSYLVANIA RAILROAD, 500 tons, bridge work.
WASHINGTON, 1500 tons, building for Department of Agriculture.
WINSTON-SALEM, N. C., 3000 tons, manufacturing building for Reynolds Tobacco Co.
CLEVELAND, 2100 tons, addition to open-hearth plant of Otis Steel Co.
RITTMAN, OHIO, 400 tons, building for Ohio Box Board Co.
CLEVELAND, 130 tons, conveyor house for Kelly Island Line & Transport Co. at Marblehead, Ohio.
PHILADELPHIA, 1800 tons, building for Integrity Trust Co. at Sixteenth and Walnut Streets, to be let by Peyton Realty Co., 300 Madison Avenue, New York.
INDIANAPOLIS, IND., 2500 tons, department store.
KENOSHA, WIS., 500 tons, hotel and theater.
CHICAGO, 900 tons, approach to LaSalle Street Bridge.
CHICAGO, 600 tons, garage at 112 West Lake Street.
CHICAGO, 400 tons, produce market at Eighty-ninth Street.
LITTLE ROCK, ARK., 3000 tons, bridge over Arkansas River, for Missouri Pacific Railroad; E. A. Hadley, St. Louis, chief engineer.
OAKLAND, CAL., 300 tons, telephone building, Forty-fifth Street and Telegraph Avenue; bids being taken.
SAN FRANCISCO, 800 tons sheet piling for Coyote Point bridge across San Francisco Bay; inquiry withdrawn.
SAN FRANCISCO, 125 tons, hall for Native Daughters of Golden West; bids opened.
SAN FRANCISCO, 5000 tons plates and shapes, oil tanker for Standard Oil Co.; Newport News Shipbuilding & Dry Dock Co., low bidder.
SEATTLE, WASH., 1500 tons plates, 78-in. penstock for Cedar River project for city; bids Feb. 17.
OLYMPIA, WASH., 235 tons, Wind River bridge; bids opened.
LOS ANGELES, 600 tons, plates and shapes for two 80,000-bbl. tanks for Pan-American Petroleum Co.; bids taken soon.

Forming an American Pressed Metal Association

On Feb. 28 those interested in forming an association of pressed metal manufacturers will meet at the Cleveland Athletic Club, Cleveland, at 9:30 a. m., to discuss the report of the organization committee and adopt a permanent form of organization. This is the result of the meeting of a group of stamping manufacturers held in Cleveland Jan. 20.

Republic Earnings Less—Sharon Steel Hoop Profits Decrease

The Republic Iron & Steel Co., New York, had net profits in 1927 of \$3,018,282, equivalent after preferred dividend payments to \$4.22 per share of common stock. This compared with \$5,065,022 or \$11.05 a share in 1926. Profits of the company during the last half of 1927 were less than \$1,000,000, while the company earned over \$2,600,000 in the corresponding period of 1926. Unfilled orders of finished and semi-finished steel amounted to 140,809 tons on Dec. 31, 1927, as compared with 88,383 tons on Sept. 30 and with 157,250 tons at the end of 1926.

Earnings of the Sharon Steel Hoop Co., Sharon, Pa., were \$555,519 in 1927, after all charges, comparing with \$1,295,542 in 1926.

British Iron and Steel Output Light in January

LONDON, ENGLAND, Feb. 14 (By Cable).—Pig iron production in January was 560,600 gross tons, while that of steel ingots, including castings, was 626,200 tons. The corresponding production in December was 559,100 tons of pig iron and 604,900 tons of steel.

A comparison of the January production with the monthly rate for previous years is shown in the following table in gross tons:

	Pig Iron, Tons	Steel Ingots and Castings, Tons
1913—Average monthly.....	855,000	628,600
1920—Average monthly.....	669,500	755,600
1922—Average monthly.....	408,500	490,100
1923—Average monthly.....	620,000	706,800
1924—Average monthly.....	609,300	685,100
1925—Average monthly.....	519,700	616,400
1926—Average monthly.....	203,500	296,700
1927—Average monthly.....	607,800	758,200
1928—January.....	560,600	626,200

PERSONAL

C. W. Heppenstall, president Heppenstall Forge & Knife Co., Pittsburgh, observed the thirty-fifth anniversary of his connection with that company by entertaining its officers and veteran employees at a banquet in the main office on Feb. 11. He began his career as an office boy for the Trethewey Mfg. Co., now the Heppenstall Forge & Knife Co., in 1893. Following the dinner a moving picture showing all the operations of the different departments of the works was presented. After the moving picture B. B. Weinberg, general manager of sales, presided, and a number of officers and employees made talks on their experiences during employment with the company. A. P. Naylor, the oldest employee in service, on behalf of the employees of the Heppenstall Forge & Knife Co. and the Heppenstall Forge Co., a subsidiary company at Bridgeport, Conn., presented Mr. Heppenstall with a hand engraved bronze tablet. Mr. Heppenstall talked on the history of the Heppenstall family and company and the growth of the plant.

Arthur Duffy has been appointed manager of the Bantam Ball Bearing Co., Bantam, Conn., relieving W. S. Rogers, president, of all details of direct management. Mr. Duffy was graduated from Purdue University, Lafayette, Ind., in 1899, and was for 16 years superintendent of buildings and purchasing agent at Purdue. Later he was for three years business manager at Oberlin College, Oberlin, Ohio, before going into commercial lines for himself at Cleveland.

Ledyard Heckscher, who some months ago resigned as president of the Alan Wood Iron & Steel Co., Philadelphia, has resigned as president and director of the Rainey-Wood Coke Co., 52 Vanderbilt Avenue, New York. Alan D. Wood has been elected to succeed him as a director of the coke company and has also been made assistant treasurer.

W. S. Isherwood, general sales manager of the AC Spark Plug Co., Flint, Mich., has been appointed a member of the board of governors of the Automotive Equipment Association.

Frank J. Wachter, vice-president and sales manager of the cutlery division, Landers, Frary & Clark, New Britain, Conn., has resigned. He had been associated with the company for 15 years.

Charles L. Newcomb, general manager Dean Pump Works, Worthington Pump & Machinery Corporation, Holyoke, Mass., has resigned, and is at St. Petersburg, Fla., for the winter. He has been succeeded by Hugh Benet, formerly with Bartlett Hayward Co., Baltimore.

T. M. Manley, who has served in various capacities for the Morse Chain Co., Ithaca, N. Y., for about 20 years, has recently been appointed manager of the district including the Mohawk Valley, northern New York, Vermont, western Massachusetts and northeastern Pennsylvania, with headquarters at the company's main office.

Roy F. Druschky, recently in the St. Louis sales department of the Wagner Electric Corporation, St. Louis, has been placed in charge of a branch office



C. W. HEPPENSTALL

opened by the company at 475 West Peachtree Street, Northeast, Atlanta, Ga. His territory will include Georgia, Alabama and Florida.

J. C. Ward, president of the Edgar Allen Steel Co., Inc., 194 Front Street, New York, sailed for England on Feb. 3, after a visit of several months in the United States and Canada.

LeRoy J. Zorn, executive vice-president of the J. H. Channon Corporation, Chicago, has been elected president of the company.

R. T. Stafford, for some years manager of the Northwest branch of the Allis-Chalmers Mfg. Co., Seattle, has been made assistant manager of the electrical department of the Pittsburgh Transformer Co., Pittsburgh. He has been succeeded by John Alberts, who has been connected with the company as representative in Europe and also in Portland, Ore., and San Francisco.

W. A. Carmer, traffic manager for the Bass Foundry & Machine Co., Fort Wayne, Ind., has been elected president of the Fort Wayne Transportation Club.

Arthur Maulding has been appointed general foreman of the steel plant of the Mount Vernon Car Mfg. Co., Mount Vernon, Ill. Robert Elliott has been made assistant superintendent.

T. B. Cram, for 19 years closely identified with the furnace industry, is now associated with Holcroft & Co., Detroit, contracting engineers, as special representative.

W. S. Hovey, president Fairbanks, Morse & Co., Chicago, will address the Mid-West Power Conference at a luncheon meeting to be held at the Hotel Stevens, Chicago, on Feb. 17. His subject will be "The Engineer's Part in Business."

Arthur E. Vail, for the past nine years superintendent of the Upper Level plant of Aluminum Co. of America, Massena, N. Y., has resigned. He has been connected with the Aluminum company at its various plants for 13 years.

W. J. Longmore has been appointed consulting supervisor of purchases Westinghouse Electric & Mfg. Co., East Pittsburgh; E. R. Norris, general works manager of all manufacturing operations; A. W. Bass, assistant to the vice-president; S. E. Marks, director of traffic, and C. G. Taylor, general purchasing agent. Mr. Longmore has been with the company since 1881 and since 1891 has headed the purchasing department. Mr. Norris, who for several years has been director of works equipment, began his connection with the company in 1892 as a general mechanic at the Newark works. He has been located at the East Pittsburgh plant since 1894. Mr. Bass started with the company in 1912 in charge of graphic statistics, and in 1921 was made director of works records. Mr. Marks entered the employ of the company in 1891 in the purchasing department, and since 1923 has been director of traffic and shipping. Mr. Taylor became assistant purchasing agent in 1895, purchasing agent in 1917, and a few years ago was made director of purchases.

C. S. Slack has been elected general manager of the Wise Industries, 1033 Mount Elliott Street, Detroit, manufacturer of cap nuts and stampings. He succeeds M. M. Wise, who has resigned.

D. F. Miner has been appointed manager of the material and process engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh. He has been with the company since 1919. He was graduated from Clark College, Worcester, Mass., in 1912, and did post-graduate work at Worcester Polytechnic Institute which brought him degrees in arts, science and electrical engineering.

W. R. G. Baker has been appointed managing engineer of the radio department of the General Electric Co., Schenectady, N. Y. He succeeds Adam Stein, Jr., who has joined the executive staff of Acoustics Products Co., a holding company recently organized to take over a number of radio phonograph companies. Mr. Baker has been connected with radio development of the General Electric Co. since it became active in this field.

George J. Klein, of the Novelty Lighting Corporation, Cleveland, was elected president of the Artistic Lighting Equipment Association, 711 Graybar Building, New York, at the association's annual convention held recently in Cleveland.

Edgar B. Thomas, for the past 15 years engaged in general engineering practice and building construction, has been added to the contract department staff of the H. K. Ferguson Co., Cleveland, engineer and builder. Mr. Thomas is chairman of the Cleveland Chamber of Commerce rivers and harbors committee, vice-president of the National Rivers and Harbors Congress and vice-president of the Great Lakes Harbors Association. He is a past president of the Cleveland Engineering Society.

R. F. Arndt, sales representative of Poole & McGonigle, Portland, Ore., structural steel fabricators, has been made a director of the Builders Exchange of Portland, representing interests of the steel industry.

J. B. Green, president of the Fusion Welding Corporation, Chicago, is spending the month of February on a lecture tour, his subject being the flow of welding metal in oxy-acetylene and metallic arc welding. The lectures are based on research work done by the engineering department of the Fusion Welding Corporation, and are being given at welding conferences held under the auspices of a number of State universities. Mr. Green will also speak at the annual meeting of the American Institute of Electrical Engineers in New York.

M. W. McArdle, vice-president and general manager of the Chicago Flexible Shaft Co., Chicago, has been elected president of the company. He has been associated with the organization for 20 years.

Dana Summers has been appointed general superintendent of the Chicago Steel & Wire Co., Chicago. He has been identified with wire manufacturing plants for 15 years.

E. J. Shuler, for the last eight years in charge of welding operations for the New Orleans Public Service Corporation, New Orleans, has joined the engineering staff of the Fusion Welding Corporation, Chicago.

Julius A. Pfeiffer, recently vice-president of the Northwestern Expanded Metal Co., Chicago, has been made director of sales of the fireproof materials division, Milwaukee Corrugating Co., Milwaukee.

E. T. Weir, president Weirton Steel Co., Weirton, W. Va., is in Nassau, British West Indies, for a stay of about six weeks.

T. M. Girdler, recently elected president of the Jones & Laughlin Steel Corporation, was the guest of honor at a dinner at the Duquesne Club, Pittsburgh, on Feb. 10, given by members of the Lehigh Alumni Association of Pittsburgh. Mr. Girdler was graduated from Lehigh University in 1901. The affair was sponsored and directed by Taylor Allderdice, president National Tube Co.; Frank Bell, president Edgewater Steel Co.; T. J. Bray, president Republic Iron & Steel Co.; F. R. Dravo and R. M. Dravo, Dravo Contracting Co.; C. D. Marshall and H. H. McClintic, McClintic-Marshall Co.; H. D. Williams, president Pittsburgh Steel Co.; F. A. Merrick, vice-president Westinghouse Electric & Mfg. Co., and R. T. Morrow, assistant to vice-president Pennsylvania Railroad.

E. S. Chamberlain has joined the Triplex Machine Tool Co., New York, as machine tool salesman. In the past he has been connected with the National Tool Co. and the Kearney & Trecker Corporation, representing both companies in the New York territory.

J. Ramsey Speer, president Mackintosh-Hemphill Co., Pittsburgh, will address the Pittsburgh Foundrymen's Association at its regular monthly meeting and dinner at the Fort Pitt Hotel, Pittsburgh, Monday evening, Feb. 20. His subject will be "Where Does the Foundryman Find His Profit?"

H. M. Davison, who has been with the Hayward Co., 50 Church Street, New York, for a number of years, the last seven as general manager of sales, has resigned.

Foundry Equipment Manufacturers Elect Officers

At the annual meeting of the Foundry Equipment Manufacturers Association, in Cleveland, Feb. 7, the following officers were elected for the ensuing year: President, S. C. Vessy, W. W. Sly Mfg. Co., Cleveland; vice-president, Henry W. Standart, Northern Engineering Works, Detroit. H. Cole Estep, Penton Building, Cleveland, was re-elected secretary-treasurer. Mr. Standart was also elected a director for the term ending February, 1931, together with A. F. Jensen, Hanna Engineering Works, Chicago. Mr. Vessy was re-elected a director. In addition to the foregoing the board now includes T. W. Pangborn, Pangborn Corporation, Hagerstown, Md., past president, and E. O. Beardsley, Beardsley & Piper Co., Chicago.

The report of the secretary-treasurer showed that the association has reached a high point in number of members and in financial resources. The reports on business conditions showed that somewhat better conditions have prevailed since the first of the year. It was agreed to take steps to enlarge and amplify the statistical work of the association.

The members were addressed by Whiting Williams, Cleveland, on the subject, "What is Industry Doing to Us?" and by E. F. DuBrul, manager National Machine Tool Builders Association, who discussed the possibility of common action between trade associations to invoke those provisions of the Clayton Act relating to unfair practices with respect to unethical buying methods.

Obituary

JOHN J. TREAT, assistant superintendent Yale & Towne Mfg. Co., Stamford, Conn., and a former mayor of Stamford, died at the Stamford Hospital Feb. 7. He was born at New Haven, Conn., in 1873.

EDWARD R. WIGGINS, advertising manager for French & Hecht Mfg. Co., Davenport, Iowa, died Jan. 31, after a brief illness, aged 41 years. He had been associate editor and contributor to various technical journals until a few years ago when he entered the advertising field.

FRED J. LA MOTTE, superintendent of the Tonawanda Iron Corporation, the pig iron producing subsidiary of the American Radiator Co., died at Tonawanda, N. Y., on Feb. 11, of pneumonia. He had been in charge of the Tonawanda furnace for four years, having come there from the Chicago district.

The Bureau of Supplies and Accounts, Navy Department, will open bids next Tuesday for 250 tons of black medium steel plates for use in construction of light cruisers Nos. 28 and 29, one-half of the tonnage to be delivered at the Mare Island and the other at the Puget Sound navy yards. Bids will also be opened at the same time for 80 tons of black medium steel rivet rods for use in constructing cruiser No. 29, building at Mare Island.

Training and Paying Executives

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leading to better organization and managerial efficiency, most companies have become interested in pensions.

In favoring the non-contributory pension plan, in which the company sets aside a certain amount each year for future payments, Mr. Cowdrick mentioned several weaknesses of the contributory plan. In the contributory plan the employer is really dealing with money which is not his own and must become involved in cumbersome records and bookkeeping. He must also adjust the payments of those who leave the service of the company before the pension time. The contributory plan likewise forces all employees to take part, and compulsion in such matters is not popular among workers.

Non-Contributory Plan Really a Savings System

Expressing opposition to the contributory pension plan, J. M. Larkin, assistant to the president, Bethlehem Steel Corporation, stated that as this system is really a means of encouraging saving among workers, he would prefer some sort of a thrift or investment plan which did not conceal its real motive under another name. Mr. Larkin stressed the fact that a pension plan is an investment and not a form of benevolence. With this fact in mind, the speaker urged the study of possible pension plans with emphasis on their social benefits rather than their cost.

Dr. Irving Clark, Norton Co., Worcester, Mass., stated that a great many workers who are retired on pension might have been kept at work much longer if adequate medical supervision had been provided in the plant. These men, who are often forced to retire because of some chronic disease contracted in late middle life, might, with proper medical care, have stayed on the job and remained of considerable value to their company both in producing power and in maintaining morale among their fellows. At the same time a worker is much more contented at work than retired on pension.

Training Men on the Job

A plea for the keeping of a detailed record of successful methods for training men on the job was voiced by H. G. Kenagy, Life Insurance Sales Research Bureau, Hartford, Conn. He deplored the lack of any definite technique for the training of workers. He characterized job analysis or the determining of what must be taught as the first step in training. The instructor should then arrange duties in the order of their difficulty and, after demonstrating proper methods, let the student try things for himself and become adequately efficient at one task before assuming new duties. Particularly important, Mr. Kenagy stated, is the measurement of a man's ability to learn and the assignment of his new work accordingly. Throughout the training period the men in charge should retain an experimental attitude and in that way build up a knowledge of the subject for future use.

Mid-Winter Safety Conference

Safety measures in steel and allied plants will feature a meeting of the Chicago district section of the Association of Iron and Steel Electrical Engineers, to be held on the evening of Feb. 21. Three papers will be presented and discussed. John P. Eib, safety director Illinois Steel Co., Joliet, Ill., will read a paper on "Education as a Means in Accident Prevention," featuring 5,028,640 man-hours in his plant without a lost-time accident. "Electrical Safety Circuits, Their Uses and Construction," by W. M. Runyon, engineer Crouse-Hinds Co., Syracuse, N. Y., and "Codes for Use in High-Tension Practices," by C. L. Baker, Bethlehem Steel Co., Johnstown, Pa., are the two other papers. The meeting will follow a dinner, and will be held at the Electric Power Club, 30 North Dearborn Street, Chicago.

Sintering a Variety of Materials

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dition arose at the plant of the E. & G. Brooke Iron Co., Birdsboro, Pa.

Since the process simultaneously desulphurizes and sinters materials efficiently, the treatment of French Creek ore had been anticipated as a possibility from the start of the sintering plant. The French Creek mines produce ore that may be desulphurized to 0.1 per cent when crushed to $\frac{1}{4}$ -in. size and sintered with about 3.5 per cent carbon. Fine crushing permits obtaining a uniform mixture, thus eliminating the variation that existed in run-of-mine lump ore.

Results obtained in improved furnace operation, from sintering tests of this material, were so satisfactory that it was decided to build a crushing plant to operate in conjunction with the sintering plant. The latter, built by the American Ore Reclamation Co. in 1911, and continued in operation until April, 1919, produced over 200,000 gross tons of sinter. A second plant, with an American Ore Reclamation Co. machine 42 in. x 57 ft. 4 in., was placed in operation in February, 1919. Plant No. 2, adjacent to the old installation, was housed in a timber building. In May, 1920, the new sintering plant, as well as the crusher installation, were totally destroyed by fire, after having produced about 100,000 tons of sinter. Notwithstanding the heavy loss, the Brooke company decided to build a larger and more modern plant immediately. This included a new crushing plant.

(To be concluded)

Sheet Steel Orders in January Ran 28,800 Tons Ahead of Shipments

January sales of the independent sheet steel manufacturers reporting to the National Association of Sheet and Tin Plate Manufacturers ran almost 28,800 tons in excess of the shipments for that month, but instead of an increase of that amount in the unfilled orders at the end of January that item was lower, as compared with one month before, by more than 51,000 tons. This is partly explained by an increase in the month in unshipped orders. Observations made during the month that production was high in relation to shipments are confirmed by the actual figures, which show that shipments were 77.6 per cent of capacity, while the production was 89.6 per cent. The statement for January, with comparisons, follows:

	January	December	November
Total number of mills.....	720	719	718
Capacity per month.....	486,550	472,064	485,350
Per cent reporting.....	72.6	72.6	72.6
Sales	302,921	530,197	344,519
Production	316,541	260,130	232,041
Shipments	274,126	221,689	224,789
Unfilled orders	694,197	745,393	437,306
Unshipped orders	110,945	97,630	92,678
Unsold stocks	59,508	53,474	52,966

	Percentages to Capacity		
Sales	85.7	154.7	97.8
Production	89.6	75.9	65.9
Shipments	77.6	64.7	63.8
Unfilled orders	196.5	217.5	124.2
Unshipped orders	31.4	28.5	26.3
Unsold stocks	16.8	15.3	15.0

New Strip Mill for Steel & Tubes, Inc.

Steel & Tubes, Inc., Cleveland, will build a new continuous hot-strip mill at its Elyria, Ohio, plant. This will have a capacity for rolling strip up to 14 in. wide. Construction is planned to start in about six months.

Prices Still Higher on Continent

Advances in Both Pig Iron and Finished Steel—British Boiler Plates Lower—Germany Gets Railroad Order

(By Cable)

LONDON, ENGLAND, Feb. 13.

HOME demand for Cleveland pig iron continues to improve, but export sales are still small. Imports of Continental iron are diminishing, last month's arrivals of pig iron totaling only 15,000 tons. The total of iron and steel imports was 284,000 tons. Cleveland iron makers have not yet recaptured the Scottish market, but sales are increasing.

Hematite is steadier as a result of some sales to Italy and Germany of special analysis iron and improved domestic demand for mixed numbers. Foreign ore continues quiet, but prices are firm as a result of the Swedish strike.

Finished steel is generally quiet for export, but domestic demand is steady. Steel plate and shape makers are endeavoring to form a central selling agency for export, but they are meeting with opposition and prospects of success are not considered hopeful.

January exports were 20,670 gross tons of pig iron, of which 200 tons went to the United States. Total

exports of iron and steel were 332,185 gross tons.

Tin plate is active, the increasing cost of foreign steel bringing consumers into the market in anticipation of an early advance in the tin plate minimum price. Works are well sold ahead and if all the present inquiry matures will be booked for many months, as output is still restricted. Some makers have booked orders for December shipment.

Galvanized sheets are active and some good tonnages have been placed with makers, enabling them to advance prices. Black sheets are moderately active.

Continental markets continue to advance with demand good and some shortage of supplies. British users of semi-finished have paid £4 14s. (\$22.90) per ton, f.o.b. for sheet bars and £4 13s. (\$22.65) per ton, f.o.b. for 2-in. billets. Merchant bars have sold for export at £5 5s. per ton (1.16c. per lb.) f.o.b. There has been some heavy business in beams at as much as £4 14s. per ton (1.04c. per lb.), f.o.b. The German output for January is reported at 1,400,000 metric tons of pig iron and 1,600,000 tons of steel ingots.

FRENCH PRICES ADVANCING

Formation of Sales Offices for Semi-Finished Steel and Beams Stabilizes Market

PARIS, FRANCE, Jan. 29.—While there is a fair volume of purchasing for current needs, business is developing largely from a desire on the part of consumers to increase their stocks at present prices in expectation of advances when the proposed national comptoirs for semi-finished material, bars and beams are established, Feb. 15. Money is easier than for some time, but costs of production and distribution will probably be increased soon by an advance in freight rates.

Prices are generally firm and in some markets there is a decided tendency to advance, but improvement is almost exclusive with iron and steel producers. Manu-

facturing industries generally have but little work on their books. There is increased unemployment in certain regions.

Pig Iron.—Producers of phosphoric foundry iron at a recent meeting decided to advance domestic prices 10 fr. (40c.) per ton for February. The new basis for No. 3 foundry is 435 fr. (\$17.05) per metric ton, f.o.b. furnace. Deductions for quantity purchases have been reduced. On purchases of 100 to 199 metric tons the reduction is 2 fr. (8c.) instead of 3 fr. (12c.) per ton; on 200 to 499 tons the reduction is 4 fr. (16c.) instead of 5 fr. (20c.) per ton; on 500 to 999 tons the reduction is 6 fr. (24c.) instead of 10 fr. (40c.) per ton and for more than 1000 tons the reduction is 8 fr. (32c.) instead of 12 fr. (48c.) per ton. Medium phosphorus foundry iron has been advanced 10 fr. (40c.) per ton. The expected decrease in prices of coke has not been

British and Continental European prices per gross ton, except where otherwise stated, f. o. b. makers' works, with American equivalent figured at \$4.87 per £ as follows:

Durham coke, del'd.	£0 18s.	\$4.39
Bilbao Rubio ore*	1 1 1/2	5.24
Cleveland No. 1 fdy.	3 7 1/2	16.44
Cleveland No. 3 fdy.	3 5	15.83
Cleveland No. 4 fdy.	3 4	15.59
Cleveland No. 4 forge	3 3 1/2	15.46
Cleveland basic (nom.)	3 15 to 3 15 1/2	18.27 to 18.39
East Coast mixed	3 9 to 3 10	16.80 to 17.65
East Coast hematite	3 9 1/2 to 3 10 1/2	16.93 to 17.17
Rails, 60 lb. and up.	7 15 to 8 0	37.75 to 38.96
Billets	6 0 to 6 10	29.22 to 31.66
Ferrromanganese ...	13 10	65.75
Ferrromanganese (export) ...	13 0 to 13 5	63.31 to 64.53
Sheet and tin plate bars, Welsh ...	5 7 1/2 to 5 15	26.18 to 28.01
Tin plate, base box.	0 18 to 0 18 1/4	4.39 to 4.45
Black sheets, Japanese specifications.	13 5 to 13 10	64.53 to 65.75
Ship plates	7 12 1/2 to 8 2 1/2	1.66 to 1.77
Boiler plates	9 2 1/2 to 9 12 1/2	1.98 to 2.09
Tees	8 2 1/2 to 8 12 1/2	1.77 to 1.99
Channels	7 7 1/2 to 7 17 1/2	1.60 to 1.71
Beams	7 2 1/2 to 7 12 1/2	1.55 to 1.66
Round bars, 3/4 to 3 in.	7 5 to 7 15	1.58 to 1.69
Steel hoops	10 10 to 11 0	2.28 to 2.39
Black sheets, 24 gage	9 15 to 10 0	2.12 to 2.17
Galv. sheets, 24 gage	13 2 1/2	2.85
Cold rolled steel strip, 20 gage, nom.	14 0 to 14 5	3.04 to 3.10

*Ex-ship. Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

(Per Metric Ton)

Foundry pig iron (a)	Belgium	France	Luxemburg	\$15.22 to 15.59
Basis pig iron (nom.)	3 0	3 0	3 0	14.61
Billets	4 13	4 13	4 13	22.65
Merchant bars:	5 5	5 5	5 5	1.16 to 1.18
Angles:	5 5	5 5	5 5	1.16 to 1.18
1/2-in. plates:	6 8	6 8	6 8	1.41
1/2-in. ship plates:	6 3	6 3	6 3	1.36
Sheets, heavy:	6 1	6 1	6 1	1.34

(a) Nominal.

large. Furnace grades have declined 5 fr. (20c.) per ton and foundry grades 8 fr. (32c.). There is a question whether these reductions will be applied to existing contracts. At a recent meeting of the entente of French, Belgian and Luxemburg producers of pig iron, it was decided that export prices be maintained for Switzerland and Italy and in other foreign markets the conditions of competition will be followed.

Ferroalloys.—As a result of the agreement between British and Norwegian ferromanganese producers prices are becoming stable. Other producers of ferromanganese are following the price set by the British and Norwegian furnaces.

Semi-Finished Material.—The new selling organization for semi-finished products and beams is to take over sales Feb. 15. Meanwhile producers entering into the agreement have decided to maintain prices until the new organization begins to function. Most mills are well booked with business and deliveries vary from five to 12 weeks. Export business is improving and prices are beginning to advance, although total purchasing is still small. Blooms are quoted at £3 19s. to £4 3s. (\$19.25 to \$20.21) per ton and billets at £4 5s. to £4 8s. 6d. (\$20.70 to \$21.55) per ton, f.o.b. Antwerp.

Finished Material.—The market on beams is strong as a result of the formation of the selling organization. Steel bars have advanced to about £5 per ton (1.10c. per lb.). Demand for wire rods is good and prices are strong but unchanged. Sheet prices are being maintained while negotiations are carried on for formation of a selling organization to control the sheet market. Even in the export market, sheet prices, affected by these negotiations, show a tendency to advance.

New German Tube Company Bought by United Steel Works

HAMBURG, GERMANY, Jan. 30.—The Niederrheinische Stahlwerke A. G., the newest German steel corporation is now entirely controlled by the Vereinigte Stahlwerke A. G. (United Steel Works). The controlling company purchased a majority of the shares through the German Tube Syndicate. It is announced that there will be no interruption in construction of the new tube plants for the Niederrheinische interests and the first tubes by a new process, the Sack-Gasse-Verfahren, will be produced about September of this year.

Public Arbitrator in Germany Handles Many Cases

HAMBURG, GERMANY, Jan. 30.—Recent statistics given out by the public arbitrator for Germany show that during 1925 a total of 4087 labor disputes were settled by the arbitrator, in 1926 a total of 5043 were settled and in 1927, with December estimated, 5907 cases were arbitrated. Of all wage disputes in Germany, 55 per cent were settled by the public arbitrator in 1926 and 59 per cent in 1927.

Despite the apparently satisfactory showing by the public arbitrator, neither employers nor employees are satisfied. It has been pointed out that both the employer and the workmen present exaggerated demands to the arbitrator, who is forced to assume full responsibility in making a decision that is fair to both sides in the controversy.

Large Railroad Order Goes to Germany on Reparations

HAMBURG, GERMANY, Jan. 30.—The French Government has placed a large railroad material order for the French West African colonies with the United Steel Works, Klockner Works and other German manufacturers. The contract, which will be delivered on reparations account during the next 14 months, includes 640 miles of track, 30 freight cars, 11 locomotives, 70 passenger cars and station equipment and cranes.

HIGHER MARKET IN BELGIUM

Reduced Competition from France Aids Price Advance—Buyers Offer Bonuses

ANTWERP, BELGIUM, Jan. 30.—Reflecting the decided increase in purchasing that has developed recently, prices are beginning to advance. Much of the present demand for iron and steel seems to be of a speculative nature, but producers maintain that prices are still too low and continued increases seem to be expected. In some quarters, however, it is pointed out that the advance in prices has been too rapid to present a healthy condition and some reaction may develop. On the other hand, export trade is showing decided improvement with French mills filling their books with domestic orders. Belgian rail mills have taken some important tonnages from the state railroads.

Pig Iron.—Buying has been in good volume and prices are firm. No. 3 phosphoric foundry iron is unchanged for export at £3 2s. to £3 3s. (\$15.10 to \$15.34) per ton, f.o.b. Antwerp. Bessemer iron is quoted at £2 18s. to £3 (\$14.13 to \$14.61) per ton, f.o.b. Antwerp.

Semi-Finished Material.—Although the volume of transactions is still small prices are firm. Buyers are seeking concessions, but mills show no inclination to shade their original quotations. Blooms range from £4 to £4 3s. (\$19.48 to \$20.21) per ton and billets from £4 6s. to £4 8s. 6d. (\$20.94 to \$21.55) per ton, f.o.b. Antwerp. There is a good demand for sheet bars and some scarcity for prompt shipment is appearing. Current prices are about £4 10s. (\$21.92) per ton, f.o.b. Antwerp.

Finished Material.—Mills in most cases are not seeking additional business. Buyers are offering to pay slight advances. Prices for steel bars continue to advance and it is only on a large tonnage that less than £5 per ton (1.10c. per lb.) is obtainable. Beams have moved upward with competition from French mills temporarily reduced by a heavier home demand and current quotations range from £4 9s. to £4 10s. per ton (0.98c. to 0.99c. per lb.). Corrugated bars are quoted at £5 5s. per ton (1.16c. per lb.), f.o.b. Antwerp. Hot rolled hoops are on a basis of £6 per ton (1.32c. per lb., f.o.b. Antwerp, and wire rods continue firm at £5 10s. per ton (1.21c. per lb.).

Finds Reinforcing Bars Are Construction Material; Take Lower Tariff

A decision favorable to importers has been rendered on deformed steel bars by Justice I. F. Fischer of the United States Customs Court, Second Division, Galveston, Tex. The court finds that the plaintiff is justified in claiming that deformed steel bars are properly dutiable under paragraph 312 of the Tariff Act, which applies to construction materials, dutiable at 1/5 of one cent per lb. instead of under paragraph 304, which applies to semi-finished material, and plain steel bars, dutiable at 3/10 of one cent per lb. when the value is not more than 1.50c. per lb.

The decision of Judge Fischer concludes:

"We are of the opinion that within all the prevailing decisions on the subject these deformed bars are structural shapes, since that is their chief if not exclusive use. Certain it is that they are *ejusdem generis* with the beams, girders, joists, angles, channels, and other structural shapes enumerated in paragraph 312. We therefore sustain the claim alleged in the protest under the latter paragraph and reverse the decision of the collector in each instance as to this merchandise."

The Government has 60 days in which to appeal this decision to a higher customs court and action along this line seems to be expected by importers. Meanwhile entries of deformed bars will be paid for by the importer at the higher rate under protest so that should the decision be sustained the excess duty will be refunded. Bars may be brought in at the lower rate if a bond is posted by the importer covering the amount of the excess duty.

Machinery Markets and News of the Works

RAILROAD LIST OF 21 TOOLS

St. Louis-San Francisco Will Take Bids Up to Feb. 20 on Inquiry

Business So Far This Year Ahead of Like Period in 1927—Automobile Companies Buying but Not Heavily

RAILROAD inquiry for machine tools has been enlarged by a list of 21 items on which the St. Louis-San Francisco will take bids up to Feb. 20. The Santa Fe is expected to place orders this month against recent inquiries. Railroad buying so far this year has been relatively light.

The principal activity in the Detroit and Cleveland markets is brought about by expanding production of automobile companies. The Packard Motor Car Co. has placed an order for a fair-sized lot of multiple spindle drilling machines, and the Ford Motor Co. con-

tinues to buy for production of its model, but on a moderate scale. Taken altogether, the business coming from the automotive industry is not as heavy as in some recent years at this time.

Machine tool sales during the first six weeks of 1928 are reported by some companies to be 20 per cent larger than in the corresponding period of 1927, but the improvement has not been evenly distributed and the result is a variation in the rate at which machine tool plants are operating. A large volume of business is pending, however, and should conditions industrially continue to improve it is expected that the present margin over the first quarter of last year will be maintained.

The National Acme Co., Cleveland, was one of the larger buyers during the week, ordering a considerable amount of equipment for the manufacture of shock absorbers for automobiles. Inquiries from the General Electric Co. at Schenectady, N. Y., has increased its recent inquiries to cover about 12 tools.

New York

NEW YORK, Feb. 14.

A GOOD volume of machine tool inquiry is accumulating but purchasing is light. The railroads continue inactive but industrial users of tools are in the market for single pieces of equipment. The General Electric Co. has issued further inquiries the past week bringing the total to about 12 tools. The New York Central Railroad has several outstanding inquiries, but has not yet announced that it is ready to place business.

Among recent purchases are a 62-in. heavy-duty and a 73-in. standard boring mill by a Milwaukee company; 18 x 96-in. used Norton grinder by a company in Wheeling, W. Va.; 8-in. rotary surface grinder and No. 1 jig boring machine by a clock manufacturer in Middle West; two 5-in. automatic milling machines by a New Jersey company; 13 x 30-in. lathe by a Massachusetts manufacturer and one also by a company in Cleveland; No. 2 jig boring machine by a tool and die maker in Detroit; 21-in. Aurora drill by a manufacturer and a 13 x 30-in. lathe by a water company in California.

Bids will soon be asked by Otis Elevator Co., Wells Avenue, Yonkers, N. Y., for a two-story addition, to cost in excess of \$50,000 with equipment. Engineering department at company headquarters, Eleventh Avenue and Twenty-sixth Street, New York, in charge.

Safe-T Stat Co., Inc., 79 Bridge Street, Brooklyn, manufacturer of electrical equipment, has arranged merger with W. G. Nagel Electric Co., Toledo, Ohio, and will consolidate production at latter plant.

Arcraft Auto Lamp Co., 141 West Fifty-fourth Street, New York, manufacturer of automobile headlights, etc., has leased space at 9-11 Franklin Street for expansion.

Fur Merchants' Cold Storage Co., 248-50 West Twenty-eighth Street, New York, will soon take bids for a ten-story addition to cold storage and refrigerating plant, to cost in excess of \$250,000 with equipment. Brutus Gundlack, 110 East Forty-second Street, is architect; Ophuls & Hill, Inc., 112-14 West Forty-second Street, is architect.

International Power & Paper Co. of Newfoundland, Ltd., operated by International Paper Co., 100 East Forty-second Street, New York, is disposing of a bond issue of \$4,866,000, portion of fund to be used for expansion, including property purchase of newsprint mill and hydroelectric generating plant on west coast of Newfoundland. A. R. Graustein is president of both companies.

Hinde & Dauch Paper Co., Sandusky, Ohio, manufacturer

of corrugated fiber containers, corrugated boards, etc., has succeeded to plant and business of Thompson & Norris Co., 212 Concord Street, Brooklyn, manufacturer of kindred products, and will continue as a division of its organization.

William Shary, 41 Union Square, West, New York, architect, will soon begin construction of a two-story automobile service, repair and garage building to cost about \$100,000 with equipment.

National Carbon Co., 30 East Forty-second Street, New York, is planning expansion at its plant at Fremont, Ohio, with facilities for output of 120,000 dry cell batteries per day. Plant at 580 Henderson Street, Jersey City, N. J., heretofore given over to this manufacture, will be transferred to Fremont, as well as plant at East St. Louis, Ill. Jersey City unit will be converted for Eastern storage and distributing service.

Fire recently damaged portion of works of American Name Plate Mfg. Co., 117 Imlay Street, Brooklyn, manufacturer of metal name plates.

Lancia Motors of America, Inc., 140 West Fifty-seventh Street, New York, lately organized to assemble Lancia automobiles, with parts imported from Italy, is arranging for installation of equipment at former plant of Fiat Co., Poughkeepsie, N. Y. Anthony G. Fokker, head of Atlantic Aircraft Corporation, 110 East Forty-second Street, has been elected president.

Godfrey M. Ricci, 224 Smith Street, Perth Amboy, N. J., architect, has revised plans for a new ice-manufacturing plant to cost close to \$35,000.

Huff Airplanes, Inc., Perth Amboy, N. J., has begun superstructure for initial units for its aircraft assembling plant, and will have buildings ready for equipment in March. Entire project will cost in excess of \$75,000.

Public Service Electric & Gas Co., Public Service Terminal, Newark, has plans for a two-story power substation at Rahway, N. J., to cost more than \$50,000 with equipment. Plans are also under way for similar station at Princeton, N. J., to cost close to like sum. Company has arranged for bond issue of \$43,689,000, portion of proceeds to be used for expansion.

Elizabethtown Water Co., 64 Broad Street, Elizabeth, N. J., is reported planning installation of pumping plant at Bound Brook, N. J., with filtration unit.

Richards Chemical Co., 198 Warren Street, Jersey City, N. J., has work under way on a new one and two-story plant, to cost approximately \$100,000 with equipment. Edward M. Paterson, 76 Montgomery Street, is architect.

American Electric Switch Corporation, Minerva, Ohio, has acquired Nyelec Switchboard Co., 422 East Fifty-third Street,

New York. Nyelec company will retain New York office factory and personnel and will be operated as Nyelec division of American corporation. Both companies manufacture safety switches, fuse panels, panelboards, switchboards and other electrical equipment.

Safety Cable Co., division of General Cable Corporation, formerly at 114 Liberty Street, New York, is now located at 420 Lexington Avenue.

Leeds, Tozzer & Co., Inc., 75 West Street, New York, has been appointed special representative in Eastern states for The Shovel Co., Lorain, Ohio, and Universal Crane Co., Elyria, Ohio.

New England

BOSTON, Feb. 13.

LOCAL machinery dealers again report a falling off in business the past week and the market is nearer a standstill than at any time this year. Sales included a No. 3 Lapointe broaching machine, hydraulic lifting equipment, a small amount of sheet metal-working equipment for a local school, a 14-in. lathe, three or four small drills, one press and miscellaneous used equipment.

New England machinery manufacturers are doing much better than dealers, several reporting good sales. A Connecticut manufacturer the past week sold 21 tools, some for domestic and some for foreign use. Many small New England shops that have inquired for equipment apparently have abandoned purchases, temporarily at least, as anticipated work has not developed. A western Massachusetts plant is expected to close on several tools this week, and some large New England users indicate they will buy equipment shortly.

Small tools are fairly active, sales the past week being the largest for any similar period this year. Expensive gages also are included in this business.

All metal-working and other equipment of Worthington Pump & Machinery Co., East Cambridge, Mass., to be retained has been moved to other subsidiary plants. Cambridge plant is disposing of equipment not needed, and is seeking purchasers for its foundry and main plant.

Work has started on a one-story, 32 x 52 ft., work shop by Providence Granite Co., 210 Kinsley Avenue, Providence. Pneumatic equipment is required.

A manufacturing plant to replace one in North Woburn, Mass., recently destroyed by fire, is contemplated by Merrimac Chemical Co., 148 State Street, Boston. J. B. Rutter, company's engineer, has plans.

York Ice Machinery Corporation, 200 Causeway Street, Boston, engineer, is preparing plans for a one-story, 80 x 150 ft., ice manufacturing plant for Brockton Ice & Coal Co., 426 Main Street, Brockton, Mass.

Smith & Walker, 80 Boylston Street, Boston, architects, have closed bids on a one-story, 34 x 44 ft., pumping station at Beverly, Mass., for South Essex Sewage Commission, of which B. F. Snow is chairman.

Commercial Bodies, Inc., of New Jersey has leased space at 128 Brookline Street, Cambridge, Mass., for repair and manufacture of motor vehicles and automobile bodies.

Schein & Levine, 44 Broadway, Chelsea, Mass., have plans for a one-story 90 x 100 ft., press room for Panco Rubber Co., 31 Highland Street, Chelsea.

Strand & Sweet Mfg. Co., Winsted, Conn., enameled wire, will shortly start construction of a wire coil manufacturing plant unit.

Plans are in progress for a one-story, 40 x 60 ft., substation for Brockton Edison Electric Illuminating Co., Brockton, Mass. Stone & Webster, Inc., Boston, is engineer.

Bids for construction of the Hartford, Conn., trade school will be requested early in March.

Independent Lock Co., 78 Winter Street, Fitchburg, Mass., will shortly start erection on a two-story, 40 x 154 ft. addition. Morris Falk, president, will supervise work. Plans are private.

General Motors Corporation has under consideration erection of an assembly plant at Stoughton, Mass., on property with frontage of 1600 ft. on New York, New Haven & Hartford Railroad.

Plans are nearing completion for a manufacturing plant at Webster, Mass., for Waterhouse Co., Tracy, Conn., boats and automobile bodies. Plans are private.

Bids have been asked on general contract by E. Ingraham Co., 392 Main Street, Bristol, Conn., manufacturer of clocks and mechanisms, for a one-story addition, 25 x 161 ft., to be used primarily as a press department. Max J. Unkelbach, Bristol, is architect.

H. C. Hearne, 1389 Main Street, Springfield, Mass., architect, has completed plans for a three-story automobile service, repair and garage building, 110 x 140 ft., to cost in excess of \$100,000 with equipment.

E. H. Hotchkiss Co., Hoyt Street, Norwalk, Conn., manufacturer of snap fasteners and kindred metal goods, has awarded general contract to Hewlett Co., Main Street, Bridgeport, Conn., for a one-story addition, 50 x 132 ft., to cost close to \$40,000 with equipment. Ballinger Co., 105 South Twelfth Street, Philadelphia, is architect and engineer.

Cadillac Automobile Co. of Rhode Island, 9 Federal Street, Providence, has awarded general contract to C. I. Bigney Construction Co., 184 Washington Street, for a one-story service, repair and sales building, to cost approximately \$115,000 with equipment.

Back Bay Hotels Garage, Inc., Boston, care of George Nelson Meserve, 260 Tremont Street, architect, has begun erection of three-story and basement service, repair and garage building, to cost in excess of \$500,000 with equipment.

Brockton Gas Light Co., 54 Main Street, Brockton, Mass., is said to have plans under way for a one-story automobile service, repair and garage building, 125 x 125 ft., for company motor trucks and cars, to cost upward of \$80,000 with equipment. C. H. Tenney Co., 200 Devonshire Street, Boston, is architect and engineer.

C. A. Cook Co., 18 Osborn Street, Cambridge, Mass., manufacturer of typewriter chairs and kindred equipment, has acquired a factory at Ashland, Mass., and plans early removal for increased output.

St. Louis

ST. LOUIS, Feb. 13.

BIDS are being asked by Board of Public Service, St. Louis, O. D. Tillay, secretary, until Feb. 21, for three forced draft fans, with turbine drives, air ducts, etc.; also for two boiler feed pumps and one house pump.

D. M. S. Motor Repair Co., 2615 Warwick Boulevard, Kansas City, Mo., recently organized, has engaged J. O. Hogg, Walsix Building, architect, to prepare plans for a two-story machine repair and parts plant, to cost close to \$40,000 with equipment.

Sapulpa Refining Co., Sapulpa, Okla., is considering rebuilding portion of oil refinery recently destroyed by fire, with loss in excess of \$125,000 including equipment.

North Arkansas Power Co., Mountain Home, Ark., is considering construction of new electric light and power plant, and ice-manufacturing plant at Salem, Ark., where franchise has been secured, to cost in excess of \$75,000 with machinery. Wyatt Wolf is head.

H. D. Lee Flour Mills Co., Salina, Kan., has plans for a new mill and elevator to cost about \$140,000 with machinery. I. L. Zerbe, 139 South Santa Fe Avenue, is architect in charge.

Curtiss-Robertson Airplane Mfg. Co., St. Louis Flying Field, Bridgeton, Mo., has revised plans for a local plant, one-story and part basement, 60 x 250 ft. and 40 x 60 ft., and one-story operating unit, 32 x 40 ft., to cost in excess of \$75,000 with equipment. McDonald & Condie, 502 North Taylor Avenue, St. Louis are architects.

Western Power, Light & Telephone Co., Salina, Kan., operating public utility properties in Kansas, Missouri and Oklahoma, is disposing of a bond issue of \$2,750,000, a portion of proceeds to be used for extensions and improvements, including transmission line construction, and acquisition of ice-manufacturing plants and other utilities. Nathan L. Jones is president.

Board of Education, University City, Mo., is considering installation of manual training equipment in new senior high school to cost \$500,000. Ferrand & Fitch, 6188 Delmar Boulevard, St. Louis, are architects.

Oklahoma Gas & Electric Co., Oklahoma City, Okla., has plans for extensions and improvements in steam-operated electric power house on Noble Street, including installation of boilers, turbine equipment and auxiliary apparatus, to cost in excess of \$200,000. Bylesby Engineering Co., 231 South La Salle Street, Chicago, is engineer.

Champlin Refining Co., Enid, Okla., is said to be planning construction of a new 6-in. pipe line from its properties at Seminole to Watchorn, about 100 miles.

Board of Education, Holbrook, Neb., plans installation of manual training equipment in a new two-story and basement high and grade school, to cost about \$140,000, for which superstructure will soon begin. Arthur D. Baker, Clinic Building, Grand Island, Neb., is architect.

Oklahoma Natural Gas Corporation, Oklahoma City, Okla., has arranged for bond issue of \$14,000,000, a portion of proceeds, to be used for expansion and improvements, including acquisition of other properties, pipe line and station construction.

Cleveland

CLEVELAND, Feb. 13.

MACHINE tool sales and inquiries dropped off somewhat the past week. The National Acme Co., Cleveland, has made additional purchase of considerable equipment including multiple spindle drilling machines, milling machines and broaching machines for manufacturing automobile shock absorbers. In the Detroit territory, the Packard Motor Car Co. placed a round lot of multiple-spindle drilling machines and another automobile manufacturer purchased two large turret lathes. The Ford Motor Co. continues to buy equipment, mostly in single machines. There is little activity outside the automotive field. No business is in prospect in the near future from railroads in this territory.

Cleveland Heater Co., 1900 West 112th Street, Cleveland, is having plans drawn for a one-story addition to cost close to \$40,000 with equipment. George S. Rider Co., Century Building, is architect and engineer. Leo Friedman is president.

Board of Education, Northfield, Ohio, is considering installation of manual training department in one and two-story high school to cost \$150,000, for which plans will soon be completed by T. R. Ridley, 109 North Union Street, Akron, Ohio, architect.

Ohio Power Co., Canton, Ohio, has arranged for a bond issue of \$10,018,000, a portion of proceeds to be used for expansion and improvements, including transmission line construction.

International Harvester Co., 2905 Chester Avenue, Cleveland, headquarters at Chicago, is considering erection of a one-story factory branch, service and repair works on East Fifty-fifth Street to cost about \$100,000 with equipment.

Board of Education, Cleveland, is said to have plans for an addition to the city trade school for foundry work, to cost approximately \$40,000.

Upson-Walton Co., Cleveland, informs *THE IRON AGE* that a recent news item listed this company as a manufacturer of wire rope, cables, etc., whereas its wire rope mill was sold some years ago to American Cable Co. Upson-Walton Co. now specializes in ship chandlery and allied articles.

Glen L. Martin Co., Cleveland, manufacturer of airplanes, will move its plant to Baltimore, Md., where new works will be placed in operation early next year. Cleveland plant will continue in operation until June, 1929. Entire output at present is being taken by United States Navy Department and removal is due to fact that this department insisted on location of plant at some point on Eastern coast.

Statement in these columns Feb. 2 that Variety Machine & Stamping Co., 3404 Tate Avenue, Cleveland, is building plant was in error; it will be built in spring. Company has purchased No. 7 Bliss press with tonnage blow of 245 tons which will take 54-in. stampings.

Gulf States

BIRMINGHAM, Feb. 13.

ABOUT 15 acres has been leased by Alabama, Tennessee & Northern Railroad Co., Mobile, Ala., for a local terminal yard, locomotive shop, freight buildings, etc., to cost about \$300,000. Project will include an engine house, with repair facilities, turntable, coal-loading and handling equipment. W. Troxey is chief engineer.

Seaboard Coal Mining Co., 25 Broad Street, New York, has plans for a coal terminal on site of former plant of Alabama Drydock & Shipbuilding Co., Mobile, Ala., with loading, conveying and other mechanical handling equipment, to cost \$150,000.

Southern Ice & Utilities Co., Odessa, Tex., will soon begin construction of a one-story ice-manufacturing plant, to cost \$60,000 with equipment.

Peden Iron & Steel Co., Houston, Tex., has foundations under way for a one-story unit, 125 x 130 ft., for production of column spirals, bar-bending and kindred steel and iron service, to cost more than \$85,000 with equipment. Traveling crane, hoists, bar-bending and other equipment will be installed.

West Texas Utilities Co., Dallas, Tex., is considering rebuilding portion of its power house and ice-manufacturing plant at Memphis, Tex., recently destroyed by fire, with loss of \$40,000 with equipment.

Alabama Water Service Co., Birmingham, is planning purchase of two 200-kva. electric generators with auxiliary equipment, for power station of Dallas Electric Co., Dallas, Ga., a subsidiary.

Corpus Christi Boiler, Welding & Machine Works, Inc., 716 Carrizo Street, Corpus Christi, Tex., has awarded gen-

eral contract to E. L. Darby Construction Co., Chaddick Building, for one-story plant, 55 x 150 ft., to cost about \$30,000 with equipment. A 5-ton travelling crane will be installed.

Atlas Mfg. Co., Orlando, Fla., is considering installation of equipment for manufacture of tin cans, and is desirous of securing information regarding cost, etc.

Transcontinental Oil Co., Waggoner Building, Fort Worth, Tex., is reported planning construction of an oil refinery at Port Arthur, Tex., to cost upward of \$175,000 with equipment.

Rice Mfg. & Distributing Co., Gulfport, Miss., R. L. Rice, president, has leased a building on Windham Avenue, Laurel, Miss., and will remodel for manufacture of safety automobile lighting equipment, control apparatus, etc.

Planters' & Shippers' Compress Co., Corpus Christi, Tex., has acquired about 80 acres on waterfront and plans construction of one-story cotton compress, with total floor space of about 400,000 sq. ft. Installation will include two high density compress units, monorail conveyor system and other mechanical equipment. Entire project will cost more than \$900,000 with machinery. E. A. Parry is industrial engineer, in charge.

Cree & Co., Cross Plains, Tex., operating a mechanical works, are considering erection of a one-story machine and forge shop at Coleman, Tex., to cost about \$18,000.

Philadelphia

PHILADELPHIA, Feb. 13.

PLANS have been filed by Sterling Motor Truck Co., Forty-eighth and Chestnut Streets, Philadelphia, for a one-story service, repair and sales branch, 182 x 220 ft., to cost in excess of \$85,000 with equipment. Clarence E. Wunder, 1520 Locust Street, is architect.

Francis J. MacDonald, president Philadelphia Ship Repair Co., Mifflin Street Wharf, Philadelphia, has concluded arrangements for purchase of ship repair yard and drydocks of William Cramp & Sons Ship & Engine Building Co., in Kensington district. Last noted company discontinued operations there several months ago. Sale does not include machine shops and foundries, this group having been taken over by Cramp-Morris Industrials, Inc., recently organized to manufacture hydraulic and electric power equipment, etc.

Pennsylvania Salt Mfg. Co., Widener Building, Philadelphia, has filed plans for a power house addition, to cost approximately \$50,000 with equipment.

Pennsylvania Water & Power Co., Holtwood, Pa., will soon ask bids for construction of a new hydroelectric generating plant on the Susquehanna River, about nine miles from present station, to cost in excess of \$20,000,000 with transmission lines. Company is affiliated with Consolidated Gas, Electric Light & Power Co., Baltimore, which will use bulk of new capacity.

Locust Construction Co., Sixth and Locust Streets, Philadelphia, is considering erection of a three-story automobile service, repair and garage building, to cost approximately \$150,000 with equipment.

Riley Milk & Ice Co., Pitman, N. J., plans for addition to its cold storage and refrigerating plant, to cost \$100,000 with machinery.

Crescent Insulated Wire Co., Trenton, N. J., has awarded general contract to Karko-Smith Co., Inc., Broad Street Bank Building, for one-story addition, estimated to cost \$15,000.

Bids will be received by Bureau of Supplies and Accounts, Navy Department, Washington, until Feb. 21 for metal propeller blades, propeller hubs and propeller hub sleeves for Philadelphia Navy Yard, and for yards at Lakehurst, N. J.; San Diego, Santa Monica and Mare Island, Cal., schedule 8458; until Feb. 28 for lighting and power cable for Philadelphia Yard, schedule 8487.

American Gas & Electric Co., 30 Church Street, New York, has secured property near Pennsville, N. J., as site for steam-operated electric generating plant to be built and operated by its subsidiary, American Electric Power Co., same address. Initial station will have a capacity of 100,000 kw. Steel tower transmission lines will be built. Entire project is reported to cost more than \$7,000,000. Stevens & Wood, Inc., 120 Broadway, New York, is engineer.

Board of Education, Lawrenceville, N. J., plans installation of manual training equipment in two-story junior high school, to cost \$300,000, for which plans will be drawn by P. L. Fowler Co., 224 East Hanover Street, Trenton, N. J., architect.

Lehigh Portland Cement Co., Allentown, Pa., has arranged for preferred stock issue to total close to \$1,000,000, a portion of fund to be used for expansion.

C. H. Bonner, Crafton, Pa., and associates, have organized Latrobe Paperboard Co., to operate a mill at Latrobe, Pa.

for manufacture of paperboard, corrugated paper products, etc. Mr. Bonner will be treasurer; N. J. Wallace, Oakdale, Pa., will be an official.

Hamilton Watch Co., Lancaster, Pa., is disposing of a preferred stock issue of \$4,800,000, a portion of proceeds to be used for expansion, including acquisition of plant and business of Illinois Watch Co., Springfield, Ill. Both plants will be continued in service.

Bureau of Water, Department of Public Works, City Hall, Philadelphia, is asking bids until Feb. 21 for a sand-washing machine, contract 913; also for pig lead, contract 910; and for furnishing and installing chlorinators, contract 912. Alexander Murdock is director.

Pittsburgh

PITTSBURGH, Feb. 13.

THE machine-tool market is showing a good degree of activity and while individual sales, in most cases, are for single tools, they are numerous enough to make a very satisfactory total. Most of the orders are against inquiries that have been up for some time, but there is a fair sprinkling of awards against recent requests for prices. New inquiry is moderate, but dealers are uncovering some requirements by personal solicitation.

Officials of Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, and duPont Viscloid Co., 330 Fifth Avenue, New York, have formed Pittsburgh Safety Glass Co., capitalized at \$1,000,000, to manufacture laminated shatterproof glass under trade name Duplate. Plans are under way for new plant at Creighton, Pa., near site of present works of Pittsburgh Plate Glass Co., to cost more than \$1,000,000 with machinery. B. P. Davis, Jr., of duPont Viscloid Co., which is a subsidiary of E. I. duPont de Nemours & Co., Wilmington, Del., will be chairman of board of new organization; H. S. Wherrett, vice-president of Pittsburgh Plate Glass Co., will be president.

Dravo Contracting Co., Neville Island, Pittsburgh, operating a boat-building and repair yard for steel barges, etc., has completed plans for a one-story addition, 125 x 200 ft., to cost in excess of \$85,000 with equipment.

Linde Air Products Co., 30 East Forty-second Street, New York, is said to have plans for a one-story works, 80 x 120 ft., at Erie, Pa., to cost in excess of \$125,000 with equipment.

Fostoria Glass Co., Moundsville, W. Va., has awarded general contract to R. R. Kitchen Co., 37 Nineteenth Street, Wheeling, W. Va., for a two and three-story addition, 75 x 260 ft., for furnace division, lehrs and other equipment to cost in excess of \$100,000 with machinery.

Erie Foundry Co., Erie, Pa., maker of forge shop equipment, has removed its Detroit office to 335 Curtiss Building, West Grand Boulevard and Hamilton Avenue. R. B. McDonald is in charge.

Packard Motor Car Co. of Pittsburgh, 4709 Baum Boulevard, has filed plans for a one-story service, repair and parts building at 4710 Mariposa Street, estimated to cost \$75,000.

Detroit

DETROIT, Feb. 13.

BIDS are being asked by Packard Motor Car Co., 1580 East Grand Boulevard, Detroit, until Feb. 27, for a one-story addition on Bellevue Avenue, to be equipped for metal stamping service, reported to cost in excess of \$100,000, with machinery. Albert Kahn, Inc., Marquette Building, is architect and engineer.

National Gas & Electric Corporation, Battle Creek, Mich., has concluded negotiations for purchase of electric light and power properties of Central States Utilities Co., at Monroe, Grand Haven and Coldwater, Mich., and will consolidate with its other properties in the State. Plans are under way for extensions and betterments, including transmission line construction.

Consumers' Power Co., Jackson, Mich., is planning the early installation of a meter repair and reconditioning shop at its local gas-generating plant, reported to cost in excess of \$40,000 with equipment; a new addition will be constructed for mechanical fan boosters and governor equipment. Plans are under way for expansion in other districts of the State, including large outdoor electric power substation at Alma, to cost more than \$100,000; new transmission line from Belding to Orleans, Mich.; and extensions and betterments of plant and system of Gardiner Light Co., Stanton and Langston, Mich., recently acquired, including transmission line construction.

Advance Pattern & Production Co., 3024 West Fort Street, Detroit, manufacturer of metal patterns and mechanical equipment, has plans under way for a one-story addition on Temple Street, to cost approximately \$25,000, with equipment. O'Dell & Diehl, Donovan Building, are architects. E. A. Ritter is secretary and treasurer.

Superior Foundry Corporation, Grand Rapids, Mich., has awarded general contract to I. K. Parsons & Son, Grand Rapids, for a one and two-story foundry, 75 x 175 ft., to cost approximately \$100,000 with equipment. Wernette & McCarthy, Houseman Building, are architects.

Universal Magnesite Products Co., Escanaba, Mich., is considering a new one-story addition to cost close to \$20,000, with equipment. Work will begin in the spring.

St. Joseph Paper & Board Co., St. Joseph, Mich., plans rebuilding portion of its mill recently destroyed by fire, with loss reported more than \$200,000 with equipment.

C. S. Klein, Detroit Saving Bank Building, Detroit, architect, has plans under way for a one-story ice-manufacturing plant, 50 x 175 ft., for company whose name is temporarily withheld, to cost about \$100,000 with machinery.

South Atlantic States

BALTIMORE, Feb. 13.

BIDS will be asked on general contract before close of month by C. Hoffberger & Co., 530-40 East Monument Street, Baltimore, operating ice and cold storage plants, for an 11-story cold storage and refrigerating plant addition to cost approximately \$900,000 with machinery. John H. Wickersham, Appel Building, Lancaster, Pa., is engineer.

Board of Commissioners, District Building, Washington, is asking bids until Feb. 23 for four air compressors, paving breakers and accessory mechanical equipment for highway department; on Feb. 24 for four concrete mixers for highway department; and until Feb. 28 for one horizontal centrifugal motor-driven air compressor complete, for power plant in District Building.

Blue Ridge Talc Co., Henry, Va., is considering rebuilding portion of plant destroyed by fire Feb. 6, with loss in excess of \$80,000 with machinery. Same fire also destroyed works of Community Electric Co., on neighboring site, with loss approximating \$75,000. This plant, also, will be rebuilt.

Claude Neon Lights of Maryland, Inc., Baltimore, care of Industrial Management Corporation, 12 Clay Street, engineer, has plans for establishment of a local plant for production of sheet metal signs, equipped with special Neon lighting devices.

Chesapeake Paper Board Co., Key Highway and line of Baltimore & Ohio Railroad, Baltimore, will take bids in about 30 days for one-story addition, including improvements in present mill, to cost about \$80,000 with machinery.

George A. Mahone, 7 St. Paul Street, Baltimore, is at head of project to construct an automobile service, repair and garage building on site of Preston Gardens, remodeling portion of existing structures, to cost in excess of \$500,000.

Industrial Electric & Machine Co., 507 East Russell Street, High Point, N. C., has awarded general contract to R. T. Cottam, Perry Street, for a one-story addition, 30 x 132 ft., to cost about \$45,000 with equipment. Traveling crane will be installed.

Mill Devices Co., Gastonia, N. C., A. B. Carter, head, manufacturer of textile mill equipment, plans construction of a new factory for manufacture of gears, nuts, bolts and kindred products, to cost more than \$80,000 with machinery.

Bureau of Supplies and Accounts, Navy Department, Washington, is asking bids until Feb. 21 for wire cloth for Eastern and Western navy yards, schedule 8445; also for pumping machinery and spare parts for Norfolk, Washington and Philadelphia yards, schedule 8460; until Feb. 28 for one turret lathe for San Diego yard, schedule 8469; until Feb. 28 for one pipe and nipple-threading machine, one flexible hand-block belt sander and one rotary slitting shear for Mare Island yard, schedule 8473; until Feb. 21 for two Diesel engines, two oil pumps, one windlass, one bilge pump, one air compressor and one air tank for Charleston Navy Yard, schedule 8497.

Stanley Milling Co., Stanley, Va., is considering rebuilding portion of plant recently destroyed by fire, with loss in excess of \$100,000 with machinery.

Ferguson Gear Works, Inc., Gastonia, N. C., is said to be contemplating a new one-story plant to cost more than \$25,000 with equipment.

Enfield-Norfleet Co., Charlotte, N. C., automobile dealer, has plans for a two-story service, repair and garage building, totaling about 25,000 sq. ft. of floor space, to cost more than \$100,000 with equipment. Lockwood, Greene & Co., Charlotte, are architects and engineers.

The Crane Market

GOOD inquiry for cranes is developing in the New York, New England and Pittsburgh districts, but purchasers are slow in placing orders. In addition to a good volume of inquiry for single locomotive cranes, the Amtorg Trading Corporation, 165 Broadway, New York, is reported to be asking prices on nine 40-ton locomotive cranes for the Dnieper River electric project in Russia. As the buyer is interested in securing kerosene motor driven cranes, it is believed that European competition for the business will be severe. In the field of overhead cranes F. L. Smith & Co., 50 Church Street, New York, are inquiring for a 25-ton, 22-ft. span crane, either hand operated or one motor, 80-ft. lift. The Western Electric Co., New York, has not yet closed on a 25-ton locomotive crane. The Gulf Refining Co., Bayonne, N. J., is inquiring for a 1/2-ton, 18-ft. span, underhung hand power crane.

In the Pittsburgh district it is expected that the Wheeling Steel Corporation will soon close for several mill type cranes for Steubenville, Ohio. Cranes will be required in plant changes, the Carnegie Steel Co. is planning for its Homestead works and in the open-hearth project at its Mingo, Ohio works. The Pittsburgh Safety Glass Co., which will build a plant at Creighton, Pa., for the manufacture of non-

shattering glass, is expected to be in the market for overhead cranes.

Among recent purchases are:

Union Bag & Paper Corporation, 233 Broadway, New York, 25-ton locomotive crane for Tacoma, Wash., from Industrial-Brownhoist Corporation.

Certain-Teed Products Corporation, 100 East Forty-second Street, New York, 10-ton crawl-tread locomotive crane from unnamed builder.

American Smelting & Refining Co., 120 Broadway, New York, 2-cu. yd. 97-ft. span bucket crane from Western builder.

Vermont Foundry Co., Windsor, Vt., used 5-ton overhead traveling crane from unnamed seller.

Stahleker Steel Corporation, Boston, 2-ton electric traveling crane for its Cambridge plant, from unnamed builder.

New England Public Service Co., Augusta, Me., 40-ton, 28-ft. span hand power crane with two 20-ton trolleys from Whiting Corporation.

United Electric Railway Co., Providence, R. I., two 1 1/2-ton electric hoists from Chisholm-Moore Mfg. Co. and two 4-ton electric hoists from Shepard Electric Crane & Hoist Co.

Buffalo

BUFFALO, Feb. 13.

ARRANGEMENTS have been made by Metalace Corporation, 373 Seventh Street, Buffalo, recently organized, for preferred stock issue of \$250,000, majority of proceeds to be used for expansion and development. Company will specialize in a line of enameled metal products and proposes to add to list of products.

Ewart C. Hugh, head of Hugh Co., 190 Elk Street, Buffalo, manufacturer of sheet metal goods, is at head of a project to construct and operate a local plant for manufacture of metal alloy boats, with base of aluminum. Company will be formed to be known as Metal Alloy Boat Co., and initial plant unit will be erected on site adjoining works of Hugh Co. Others interested in new company include H. L. Chisholm, Jr., W. P. Wells and J. T. Snyder.

H. J. Heinz Co., 1062 Progress Street, Northside, Pittsburgh, canned food products, has filed plans for a new factory branch and distributing plant at 145 Marion Street, Buffalo, to cost \$50,000.

Rochester Gas & Electric Corporation, Rochester, N. Y., has applied for permission to extend its transmission lines in Monroe and Ontario Counties, including power substation facilities. Company will also make extensions in gas system, including pipe line construction.

Board of Education, Gloversville, N. Y., contemplates installation of manual training equipment in addition to high school to cost \$350,000. W. Brown Van Dreser, 31 West Fulton Street, is architect.

Curtiss Aeroplane & Motor Co., 74 Kail Street, Buffalo, has taken out a permit for a one-story addition to cost close to \$20,000.

Indiana

INDIANAPOLIS, Feb. 13.

CONTRACT has been let by Bishop, Knowlton & Carson, 312 North Meridian Street, Indianapolis, architects, to Brown-Mack, Inc., 226 East Michigan Avenue, for a three-story and basement automobile service, repair and garage building, 100 x 165 ft., at 1452 North Pennsylvania Street, reported to cost close to \$200,000 with equipment.

Standard Plating Works, Goshen, Ind., has broken ground for a one-story addition, reported to cost in excess of \$16,000 with equipment.

McCord Radiator & Mfg. Co., Plymouth, Ind., headquarters at Chicago, manufacturer of automobile radiators and radiator cores, gaskets, etc., has arranged for a bond issue of \$2,500,000, a portion to be used for expansion in plants and facilities. A. C. McCord is president.

Board of Education, Evansville, Ind., contemplates the installation of manual training equipment in proposed two-story and basement grade and high school at Lincoln and McCormack Avenues, estimated to cost \$300,000, for which bids have been asked on general contract. Fowler & Karges, Furniture Building, are architects.

Craftsman Tool Co., Marion, Ind., has plans for a new one-story plant, estimated to cost close to \$45,000 with equipment.

Pierce Governor Co., Anderson, Ind., manufacturer of

speed control equipment for internal combustion engines, is arranging for the sale of a stock issue of 60,000 shares, a portion to be used for expansion in manufacture.

Chicago

CHICAGO, Feb. 13.

ALTHOUGH this market is showing a fair degree of activity, the lack of large lists and the effort necessary to follow up small business is keenly felt. Sales the past week were smaller in volume, but inquiry enlarged by the Santa Fe list is promising. The St. Paul is in the market for a 16-in. x 8-ft. lathe. A pipe manufacturer at Milwaukee is erecting an addition and may require some new machinery in the spring. Deliveries are satisfactory. There has been a fair movement in used machinery. It is reported that price advances are being considered on several lines of machine tools.

Crowe Name Plate & Mfg. Co., 1749 Grace Street, Chicago, manufacturer of metal name plates, etc., is said to be planning a one-story addition to cost more than \$23,000 with equipment.

Container Corporation of America, Inc., 111 West Washington Street, Chicago, manufacturer of solid fiber containers, corrugated board specialties, etc., has arranged for stock issue to total \$3,330,000, a portion of proceeds to be used for expansion.

Great Northern Utilities Co., Shelby, Mont., is completing plans for a new power house with gas engine units using natural gas, generators, and auxiliary equipment, to cost in excess of \$250,000 including transmission line construction. A. H. Sikes is manager.

Dayton Co., Eighth Street and Nicollet Avenue, Minneapolis, Minn., has plans for a four-story, basement and sub-basement addition to its automobile service, repair and garage building, to cost more than \$300,000. Long & Thorshov, Andrus Building, are architects.

Eagle Furniture Co., 1828 South Fourth Street, Rockford, Ill., has work under way on a three-story and basement factory addition, 60 x 60 ft., to cost upward of \$85,000 with equipment. Peterson & Johnson, Swedish-American Bank Building, are architects.

Joseph W. McCarthy, 139 North Clark Street, Chicago, architect, has been selected by Holy Name Trade School, care of William Hoffman, 721 Cass Street, to prepare plans for a boys' trade and vocational school at Lockport, Ill., to cost in excess of \$100,000 with equipment.

Minnesota Power & Light Co., West Superior Street, Duluth, Minn., has taken over former plant of Deetz Sheet Metal Works, 104 Garfield Avenue, and will remodel for a new equipment storage and distributing plant to cost \$110,000. Charles C. Olsen is engineer.

Carney Co., Mankato, Minn., has begun rebuilding portion of its local cement mill, recently destroyed by fire, to cost \$125,000 with equipment. George Pass & Son, Eckle Building, are architects.

Hinde & Dauch Paper Co., Sandusky, Ohio, manufacturer of corrugated fiber containers, corrugated paper goods, etc.,

has plans for a one-story unit at Sullivan, Ill., to cost more than \$90,000 with machinery.

City Council, Emmetsburg, Iowa, is considering installation of a municipal electric light and power plant to cost upward of \$30,000 with equipment.

Board of Education, Storm Lake, Iowa, is considering installation of manual training equipment in two-story high school to cost \$175,000, for which plans are being prepared by Keffer & Jones, Masonic Building, Des Moines, Iowa, architects.

M. A. Erickson, head of Rugby Light & Power Co., Rugby, N. D., is planning construction of a new steam-operated electric power house at Kenmare, N. D., to cost about \$75,000 with equipment.

* Iowa Railway & Light Co., Cedar Rapids, Iowa, will make extensions in its power plant at Nevada, Iowa, including installation of additional equipment, to cost \$35,000.

Cedar Rapids Engineering Co., Cedar Rapids, Iowa, will build a shop addition, 60 x 100 ft. O. F. Paulson Construction Co. is general contractor.

Hutchins Co., Inc., 410 Phoenix Building, Minneapolis, has been organized to manufacture D. K. pressure lubricator, patented device with meter for dispensing grease in transmissions and differentials of automobiles. Company has assembly plant, but is in market for tanks, fittings, etc.

Cincinnati

CINCINNATI, Feb. 13.

DESPITE a falling off of fresh orders for machine tools the past week, sales the first six weeks of 1928 show an increase of approximately 20 per cent over the corresponding period last year. The amount of pending business which should be placed in the next 60 days is the basis for the prediction that this margin over 1927 will be maintained throughout the first quarter. The improvement, however, has by no means been well distributed among machine tool companies. Some builders have profited recently by an impressive volume of orders, while others have obtained only a meager supply. This condition has resulted in spottiness, so far as operations of local plants are concerned.

The St. Louis-San Francisco Railway Co. is inquiring for 21 tools, bids for which close on Feb. 20. Action on the Santa Fe list is expected this month. Automobile companies are making a fair number of purchases and will be heavy buyers in the near future. A local builder has sold eight 18-in. engine lathes for shipment to the Pacific Coast.

St. Louis-San Francisco Tool List

The following motor-driven tools are for 440-volt, 3 phase, 60 cycle current. Bids will be received by B. T. Wood, vice-president and chief purchasing officer, St. Louis, until Feb. 20.

- One traverse gaining machine.
- One model F. G. Micro internal grinder with two sets of grinding wheels.
- One Niles combination journal turning and axle lathe.
- One No. 2 Williams crusher and pulverizer.
- One 90-in. Putnam heavy duty driving wheel lathe.
- One No. 220 Jarecki pipe threading machine.
- One metal band saw with six extra blades.
- One Niles 96-in. 600-ton driving wheel press.
- One Warner & Swasey No. 4-A hollow hexagon turret lathe with 25-in. swing.
- Two wood-boring motors, similar to Independent Pneumatic Tool Co.'s No. 62.
- One Pels punch and shear with 30-in. throat.

The following equipment also will be purchased:

- One 100-ton spring testing machine.
- Three Cyclone 5-ton high-speed chain hoists.
- One 24-in. heavy-pattern American crank shaper.
- One Leeds-Northrup recording pyrometer and temperature control for 6-ft. x 40-ft. car type heat treating and annealing furnace.
- Two Model 5021-A automatic temperature controllers of thermocouple type.
- One 3000-lb. Baker electric truck.

Plans are under consideration by Peters Cartridge Co., First National Bank Building, Cincinnati, for a new three-story plant at Kings Mills, Ohio, to cost more than \$60,000 with equipment. Van Leyen, Schilling, Keough & Reynolds, 3440 Cass Avenue, Detroit, architects.

Tennessee Box Co., Johnson City, Tenn., manufacturer of wooden boxes and containers, has acquired former plant of

Von Cannon Lumber Co., and will remodel to double capacity of present mill.

Shelby Electric Co., 392 South Main Street, Memphis, Tenn., manufacturer of electrical specialties, has awarded general contract to F. J. Ozanne & Co., Empire Building, for new one-story plant, to cost close to \$45,000 with equipment. E. L. Harrison, Fidelity Bank Building, is architect.

P. J. Bradshaw, International Life Building, St. Louis, architect, has plans for a four-story motor bus service, repair and terminal building, 200 x 300 ft., at Louisville, to cost \$350,000 with equipment. J. Graham Brown, Fourth Street and Broadway, Louisville, is head of project.

Air Corps, Material Division, Wright Field, Dayton, Ohio, is asking bids until Feb. 24 for 100 wheel assemblies, circular 221; until Feb. 23 for 20,000 ft. high tension ignition cable, circular 222; until Feb. 23 for 50 pilot director assemblies, circular 223; and until Feb. 27 for 30,305 lb. sheet iron and 41,500 lb. cold rolled steel, circular 226.

United States Foil Co., Thirtieth Street and Grand Avenue, Louisville, is having plans prepared for three-story brick and steel office, manufacturing and warehouse buildings at Hale and Grand Avenues. Ossian P. Ward, Louisville, is architect.

J. F. Kurfees Paint Co., 201 East Market Street, Louisville, has completed plans for four-story addition, of concrete slab construction with brick curtain walls. Joseph & Joseph, Louisville, are architects.

F. J. Ozanne & Co., Memphis, Tenn., have been awarded contract for erection of factory and sales building for Shelby Electric Co., at Iowa and Main Streets, Memphis. It will be of saw tooth design and will be completed within three months.

Pacific Coast

SAN FRANCISCO, Feb. 8.

PLANS are being arranged by Pacific Coast Steel Co., Rialto Building, San Francisco, for a new unit at its plant at South San Francisco, to be equipped for the manufacture of bolts, nuts, rivets, etc. Appropriation of \$500,000 has been approved.

Department of Water and Power, 207 South Broadway, Los Angeles, has filed plans for a two-story and basement power substation, 75 x 103 ft., at 5736 South Figueroa Street, reported to cost \$110,000, with machinery. E. F. Scattergood is chief engineer.

Coast Machinery Co., Los Angeles, has leased a one-story factory to be constructed by Austin Co. of California, 777 East Washington Street, on Merrill Avenue, estimated to cost \$100,000. Present works will be removed to new location and capacity increased.

Benbow Power Co., Benbow, Cal., recently organized, has made application for permission to construct and operate a hydroelectric power plant on the South Fork of Eel River, to be used for mining and other service, reported to cost in excess of \$200,000, with transmission lines.

Pacific Gas & Electric Co., San Francisco, is disposing of a bond issue of \$20,000,000, a portion of fund to be used for expansion and improvements, including transmission line and other construction.

Pacific Fruit Express Co., 65 Market Street, San Francisco, is reported planning a car repair and reconditioning works at Tucson, Ariz., where site was recently acquired, for refrigerator car service, to cost more than \$200,000, with equipment. Company is a subsidiary of Southern Pacific Co.

Northwest Power & Light Co., Port Angeles, Wash., has made application for permission to use water from Elwha River for a proposed hydroelectric power development, with initial plant to have capacity of 22,000 hp., reported to cost in excess of \$1,000,000, with transmission lines.

Armijo High School District, Fairfield (Solano County), Cal., has plans under way for a one-story machine shop and manual training unit at its group school, reported to cost about \$35,000, with equipment.

Mullenbach Electrical Mfg. Co., 116 East Sixteenth Street, Los Angeles, has been organized to manufacture switchboards, panel boards, cabinets and electrical control distribution apparatus. Plant is completed and in operation.

Work has been started on construction of large machine shops for Southern Pacific Railroad at Eugene, Ore., estimated cost \$250,000. H. E. Wilder, contractor, Eugene, has the contract.

Montgomery Mfg. Co., is building new plant on West Spokane Street, Seattle, for manufacture of disk wheels for automobiles.

Winner Tool Co., Puyallup, Wash., has increased capital stock from \$50,000 to \$100,000, and will make some additions to plant.

Ballard Drop Forge Co., Seattle, has taken over agency for State of Washington for Williams form and column clamp, made by Hawley Mfg. Co., Chicago.

Foreign

PLANS are being arranged by Government Wood Chemical Trust, Soviet Russian Government, Moscow, for a new turpentine and resin plant at Barnaoul, Siberia, reported to cost in excess of \$400,000. During next 36 months same interests propose to build five similar plants at various points in Siberia. American-Russian Chamber of Commerce, 143 West Fifty-seventh Street, New York, has information regarding the project.

A canning company at Goteborg, Sweden, has plans under way for construction of a new five-story factory. Machinery to be purchased will include separating equipment, refrigerating machinery, sterilizing and exhausting equipment, can-making machinery, etc. Information at office of Bureau of Foreign and Domestic Commerce, Washington, reference Sweden No. 267053; also at American Consulate, Goteborg, H. C. von Struve, consul.

Nippon Electric Power Co., Ltd., Tokyo, Japan, has arranged for sale of \$9,000,000 bond issue in United States, portion of proceeds to be used for extensions and improvements, including power plant and transmission line construction. Company has work under way on a steam-turbo electric generating plant with a capacity of 40,000 kw. Yoshizo Ikeo is vice-president.

A company at Perth, Australia, has plans for a new local plant for production of fencing and barbed wire. Information at office of Bureau of Foreign and Domestic Commerce, Washington, reference Australia No. 60014; also at American Consulate, Sydney, Australia, Charles F. Baldwin, assistant trade commissioner.

London & North Eastern Railway Co., London, England, is arranging early construction of a freight classification yard at Cambridgeshire, including sorting classification facilities for more than 3600 cars, hydraulic retarders, repair and reconditioning facilities, etc. Entire project is estimated to cost close to \$1,500,000. Information at office of American Consulate, London, William L. Cooper, commercial attaché.

Bwana M'Kubwa Copper Mining Co., Ltd., Capetown, South Africa, operated by Anglo-American Corporation of South Africa, Ltd., same address, has arranged for increase in capital to £3,500,000. A new bond issue of £1,000,000 (about \$4,800,000) is being arranged, portion of proceeds to be used for installation of an additional plant at Bwana M'Kubwa mining properties.

H. C. Atkins Mfg. Co., 2318 Randolph Street, St. Louis, has appointed following agents: H. Romeyn Smith, Inc., 12 Lispenard Street, New York, in metropolitan New York; Leon Commerford, Washington, in Middle Atlantic States; Southern States Sales Co., Albany, Ga., in Southeastern States, and Brown & Baily, San Francisco and Los Angeles, on Pacific Coast.

Canada

TORONTO, Feb. 13.

MACHINE tool sales the past week were augmented by several lists from Canadian industrial companies which are building additions to plants or have new works under construction. The Canadian National Railways have closed on a machine for polishing and finishing tubes; 14-ft. radius jib crane; emery wheel stand; 48-in. Bertram car-wheel borer, with Davis carwheel boring tool; several air compressors; 8 1/2-in. Westinghouse compressor and an automatic valve grinder. Other lists are appearing and a volume of business is pending.

While Canadian dealers and builders are securing a large portion of the machine tool business, a considerable number of current orders is also going to the United States. During the month of November Canadian industrial companies imported from the United States tools and machinery valued at more than \$520,000. It is understood that the bulk of this demand is for equipment that is not produced here, and must of necessity go to the United States.

Alan Campbell and associates have purchased building, machinery, stock, etc., of Canadian Radiant Electric Co., Grimsby, Ont., and will remove equipment to Bowmanville, Ont., where it will be installed in plant of Bowmanville Foundry Co. Company will operate under name of Canadian Radiant Co. Officers include Alan Campbell, president; C. E. Rehder, vice-president; directors, Peter Campbell, P. A. Thompson, Montreal, and Arthur Campbell, Montreal.

Armstrong, Siddeley Motors, Ltd., operating in association with Ottawa Car Mfg. Co., Ottawa, Ont., has completed arrangements for manufacture of aero engines.

Modern Tool & Die Works, Essex, Ont., contemplates erection of an addition.

London Airports, Ltd., London, Ont., will call for bids about March 1 for construction of two steel hangars, 40 x 40 ft. Machine shops will be erected later.

Ratepayers of Collingwood, Ont., carried a by-law authorizing construction of a grain elevator to cost \$800,000, by Collingwood Elevator Co. Building will be of reinforced concrete and have capacity of 2,000,000 bu. C. D. Howe & Co., 704 Whalen Building, Port Arthur, Ont., are engineers.

Crown Cork & Seal Co., Ltd., 87 Parliament Street, Toronto, has secured new site and will erect a one-story factory, 120 x 200 ft., to cost \$100,000. Welis & Gray, Confederation Life Building, Toronto, have been awarded general contract.

I.T.S. Rubber Co. of Canada, Ltd., 30 Alpine Avenue, Toronto, has had plans prepared for erection of a \$30,000 addition.

Only One Blast Furnace in Africa



AFRICA has only one blast furnace, but even with this monopoly it has rather hard sledding because the market for the product is so small that the output of the furnace is not fully absorbed. The furnace is at Newcastle, Natal, South Africa, on the main line between Durban and Johannesburg. It furnishes basic pig iron for the Union Steel Corporation of South Africa, Ltd., by which it is owned, and foundry iron is supplied to foundries throughout South Africa. Last year the furnace produced 37,850 tons in the nine months ended Sept. 30, when it was blown out because of overproduction, and it will not be relighted until about the middle of this year. Coke is produced from South African coal, and the ore used is mined in South Africa and runs 40 per cent iron, 6 per cent silicon and 5 per cent carbon. J. K. Eaton is resident director of the furnace property.

E. Thibault, St. Therese, Que., has been awarded contract for erection of a factory, 80 x 150 ft., at Joliette, Que., for C. Muir Rubber Co., Ltd., 437 Bourget Street, Montreal. C. A. Reeves, 83 Craig Street West, Montreal, is architect.

Western Canada

C. D. Howe & Co., Whalen Building, Port Arthur, Ont., and Vancouver, are preparing plans for erection of a grain elevator at foot of St. Andrews Avenue, Vancouver, B. C., to cost \$1,000,000 for Randall, Gee & Mitchell, Winnipeg and Vancouver.

Stuart, Cameron & Co., Ltd., Vancouver, B. C., has been awarded contract for construction of a 1,000,000 bu. grain elevator at New Westminster, B. C., for the New Westminster Harbor Commissioners.

NEW TRADE PUBLICATIONS

Automatic Feeds for Punch Presses.—F. J. Littell Machine Co., 4125 Ravenswood Avenue, Chicago. Catalog No. 27, 6 by 8½ in., 48 pages. Several roll feeds and roll feed combinations are described, as well as dial, magazine hopper, pusher, and chute and slider feeds. Pages are also devoted to stock reels and special machines. The feeds are designed for stock ranging in thickness from 0.001 to 1.40 in., and up to 7½ in. wide.

Grinding Wheel Chuck.—Norton Co., Worcester, Mass. Booklet describing the features of the company's chuck for segmental grinding wheels.

Hot Pressing of Brass Parts.—Zeh & Hahnemann Co., 182 Vanderpool Street, Newark, N. J. Four-page bulletin outlining the advantages and method of producing hot pressed brass parts. Information is given on the metals, dies, and machines employed.

Adding Nickel to Cast Iron.—International Nickel Co., 67 Wall Street, New York. Instruction card, showing methods whereby nickel may be alloyed with foundry iron, either in the cupola or in the ladle, and notes on proper mixtures for particular services. A 4-page pamphlet entitled "High Duty Requirement" describes the general effect of nickel in cast iron.

Nitralloy and the Nitriding Process.—Ludlum Steel Co., Watervliet, N. Y. 24-page pamphlet describing properties of aluminum-chromium steels, and the means whereby they may be given an intensely hard, corrosion resisting surface by heating at 875 deg. Fahr. for from 2 to 90 hr. in an atmosphere of ammonia, followed by a slow cooling.

Large Metallographic Equipment.—Bausch & Lomb Optical Co., Rochester, N. Y. Describes metallurgical microscope and camera with permanently aligned optical system. Fine focusing adjustment carries only 4 oz. weight, enabling heaviest specimens to be kept permanently in focus. Shock absorbers also eliminate vibration. Accessories are available for photographing at all magnifications from several thousand down to full size.

Gate Hoists.—D. J. Murray Mfg. Co., Wausau, Wis. Booklet devoted to facilities of company for manufacture of gate hoists for power reservoir and irrigation dams.

Rails and Accessories.—Sweet's Steel Co., Williamsport, Pa. General catalog listing and describing the company's products, which include light steel rails, special plain splice bar sections, heavy steel rails and special rail sections, track bolts and spikes, fabricated portable track, steel mine room ties, light steel angles and miscellaneous products.

Bolts, Nuts, Rivets and Screws.—Pheoll Mfg. Co., 5700 Roosevelt Road, Chicago. General catalog presenting company's standard lines. Included are special machine screws and bolts, cap and set screws, stove bolts and rods, special rivets, machine screw nuts, stove bolt and cap nuts, semi-finished steel and brass nuts, wing nuts, threaded rods, wire and studs, brass washers and metal stampings.

Time Recorders.—Esterline-Angus Co., Indianapolis. Bulletin 1127 containing description and specifications of company's new time recorder.

Ventilating Equipment.—American Blower Corporation, Detroit. Bulletin 3504 devoted to company's type SE steel plate blower. Full specifications are provided.

Low-Temperature Carbonization of Coal.—International Coal Carbonizing Co., 200 Madison Avenue, New York. Catalog KSG-2 of 12 pages is devoted to the KSG process, developed in Germany. Description of the

process is given, with a diagram showing the flow of materials and gases through the system. Many elements of the plant are illustrated, while the description covers the pertinent facts.

Unit Heaters.—Buffalo Forge Co., Buffalo. Four-page folder with illustrations, describing a floor-type high-pressure unit designed to recirculate the air in heating a factory building.

Handling Equipment.—Revolvator Co., 336 Garfield Avenue, Jersey City. Bulletin 81 of four pages illustrates many types of handling and loading equipment for warehouses and manufacturing plants. The illustrations show the equipment in use.

Floor Crane.—Manley Mfg. Co., York, Pa. Bulletin of two pages illustrating and describing portable floor cranes of one and two-ton capacity. These are both the gantry and the jib type and are operated by chain block or other manual means.

Aerovane Blowers.—Bayley Blower Co., Milwaukee. Catalog 32 of 34 pages illustrates and describes blowers for forced draft and other purposes, made on the aerovane model. Most of the volume is taken up with dimension and clearance diagrams, and tabular matter related to the capacities of the different sizes of blower included.

Steel Racks.—Lewis-Shepard Co., Watertown, Mass. Folder of four pages devoted to arc-welded steel storage racks, designed to store any size or shape of material. Layouts may be made to suit any requirements.

Lift Trucks.—Lewis-Shepard Co., Watertown, Mass. Folder devoted to a "complete family" of lift trucks, portable elevators, and lift truck platforms. The arc-welded platform is arranged for entrance of the lift truck on all four sides. A power-operated stacker, a jack-lift, and a single stroke lift truck complete the list.

Notes on Machining Alloy Steel.—International Nickel Co., 67 Wall Street, New York. Compares machinability of various alloy steels, as reported from recent investigations. Recommends profile and angle of tool, and cutting speed and feeds best for steels of various tensile strengths.

Electrical Supplies.—Westinghouse Electric & Mfg. Co., East Pittsburgh. The 1928-1930 catalog, 1200 pages, presents the electrical and mechanical features and application information for all supply apparatus and appliances manufactured by the company. In addition, it describes and illustrates a representative list of large motor and generating apparatus. All equipment obtainable through district offices or agent-jobbers is completely described and illustrated.

Calendar.—Committee on Public Relations of Eastern Railroads, New York. Following the style of calendar used for several years, the various railroads through 1928 are given colors, representing respectively the number of days' revenue necessary to pay for each of the major expense items of the railroads. The first 51 days are required to pay the year's wages, then 24 days' pay for locomotive fuel, 69 days for materials and supplies, 24 days for all other operating expenses, 22 days for taxes and 40 days for interest and rents. There remain 23 days to pay for dividends and only 13 days to make improvements out of earnings or to make up losses of leaner years.

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